Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

Vol. 4. New York, February 10, 1849. No. 21.

THE
SCIENTIFIC AMERICAN :
CIRCULATION 11,500.
PUBLISHED WEEKLY.
At 128 Fulton Street, New York (Sun Building,) and 13 Court Street, Boston, Mass.
By Munn & Company.
The Principal Office being at New York.

TERMS—$2 a year—$1 in advance, and the remainder in 6 months.
☞See advertisement on last page.

Poetry.

THE AMERICAN EDITOR.

BY WILLIAM WALLACE.

I'm of the Press! I'm of the Press!
My throne a simple chair;
I ask no other majesty
Than strikes the gazer there,
The horse of fire obeys my rod;
My courtiers walk the sea;
The lightnings lift their flaming manes,
At Art's command for me.

I'm of the Press! I'm of the Press'
Do monarchs wear the crown!
I waft my pen across my page,
And crowns have tumbled down.
The clouds float on—the nations strive;
Without the thunder rolls;
Within, I brood the quiet thought
That changes all the souls.

I'm of the Press! I'm of the Press!
The dead around me throng;
Their awful voices whisper *Truth!*
Their eyes forbid the *Wrong*,
From them I gather joy and strength,
Nor heed pale Error's curse,
My faith in God large as the arch
He gave the Universe.

I'm of the Press! I'm of the Press!
My host embattled types;
With them I quell the tyrant's horde
And rear the stars and stripes.
I give my hand to all my race,
My altar Freedom's sod:
I say my say and bend my knee
Alone, alone to God.

THE DYING.

Oh, mother, make my bed for me.
I'll ask it not again;
Why are thy eyes so dim with tears?
I would not give thee pain.

Father, dear father, ere I die,
Draw near my couch of death,
And seal thy blessing, ere I yield
My last expiring breath.

Sister, stretch out thy trembling hand,
I feel I'm dying now;
Wipe off those tear-drops from thy eyes,
And smooth my burning brow.

Brother, breathe out thy last farewell,
And give thy parting kiss,
Ere my freed spirit takes its flight
To yon bright world of bliss.

Friends of my gay aud joyous hours,
I've loved you deep and long,
Breathe out for me one parting prayer,
And sing one parting song.

Farewell! but when I'm laid to rest:
Breathe not for me a sigh;
Death comes! it was a grief to live,
An endless bliss to die.

An ærolite fell lately at Fishertown, Md., and burst into fragments, which were like iron stone, the external surfaces rounded and polished and the internal radiating from many centres.

HARSTON'S IMPROVED DRILLING MACHINE.

Figure 1.

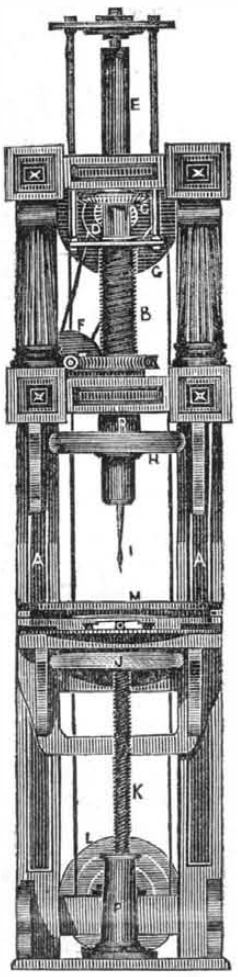
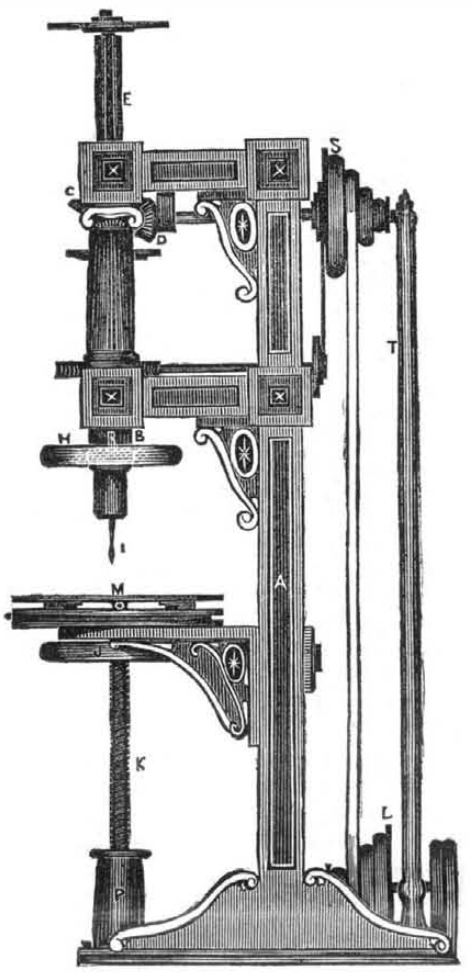


Figure 2.



This is a beautiful form of a new Drilling Machine got up and constructed by Mr. G. B. Hartson, No. 42 Gold st., this city. It is designed for the drilling of large castings or heavy articles, and it combines in one frame both the table and drill.

Fig. 1, is a side elevation, and fig. 2, a front view. The same letters of reference indicate like parts on both figures. A, is the frame, designed in pure Grecian style. R, is the collar through which the spindle E, of the chisel feeds. Attention must be paid to both figures. B, is a screw cut on the collar of the spindle E. D C, are bevel gearings to revolve the spindle and consequently the chisel I. T, is a support of the pulley shafts whereby motion is communicated from L to S, by the band which thus drives D C, and gives the spindle a rotary or drilling motion. The gear which feeds the spindle down is a band from S, to the pulley F, on the axle of which is a worm, which meshes into the large thread wheel through which passes B, as seen in fig. 2. Every revolution of the worm moves the thread wheel one tooth, so that its motion of feeding is comparatively slow. M, is the table on which the work to be drilled is placed. It is made to be moved round on vertical axles and to be raised and lowered by the screw K, secured to the bottom of the table and working up and down in the pillar nut P, operated by the wheel handle I. When the hole is drilled the desired depth, there is a handle, which is not seen in the engraving, for unshipping the worm with the nut wheel, and running up the spindle and chisel by the wheel handle H. All the parts of this drilling machine are very simple, of a beautiful pattern and of the best materials. Mr. Hartson makes only the first quality of tools, and we are glad to know that his efforts in the production of machines that confer honor to the machine shop, are appreciated. Good tools are always the cheapest in the end. A few years ago our mechanics used to think that any kind of tools, shafting, &c., it made no matter how they looked so as they moved, were good enough. A better spirit and taste is abroad, and much pride is now being exhibited to fit up the machine shop with good and tasteful tools. Mr. Hartson is doing much to propagate and cultivate this taste, alike creditable to him and those who admire his spirit.

How to Catch Hawks.

The following ingenious method for destroying these pests to the farmer is given by S. Webb, Esq. of Waldo county, Maine.

"Erect a pole, twelve or fifteen feet high, in a place where there will not be anything else near for them to light upon, and upon it set a common fox-trap, on which they will light. A strong rat trap will answer the purpose, by tying it to the pole lengthwise, with the jaws raised above the end, the pole being a little leaning, so that the jaws will not fall together. When the hawk is taken tie it on the ground near the pole and its mate will be in the trap in a short time. The season is near for the hawks to reappear and if farmers do not wish to have their chickens destroyed by them, they will do well to adopt this method of putting a stop to their depredations."

Petrifactions.

The leg of a child has been found in a state of petrifaction near Cincinnati, Ohio, on the lands of Mr. S. Hazen. Each muscle was distinctly observable and the toes and nails were perfect. On digging further, two large frogs were found also petrified and perfect in their form. These curiosities have been placed on exhibition.

At a public meeting held at Glasgow on the 1st ult. Professor Thompson stated that although cholera was prevalent in Glasgow, the deaths during the previous week were only half the number they were in the corresponding week of the year 1847.

RAILROAD NEWS.

Delaware and Raritan Canal and Camden and Amboy Railroad Companies.

We have received a large pamphlet of 78 pages, containing the Report of a Committee of investigation appointed by the Board of Directors of the above Companies to examine into certain charges made against them by an anonymous writer signing himself "A Citizen of Burlington." The charges were frauds, false entries, false reports, swindling of the funds, &c. The committee of investigation was composed of Messrs. James G. King, W. Pennington and Charles Parker, men of distinguished character—the former to our knowledge above reproach. Their report is a very lucid and full one, and places the matter in a clear light before the public. The conclusion which they have arrived at is, that "these companies are well conducted and honestly, and that no ground exists for any imputation upon the character or conduct, personal or official, of any of the officers or directors of the above companies."

Railroads.

The Massachusetts Western Railroad received from all sources during 1848 the sum of $1,332,068 29 and expended $652,357 11. After deducting the interest on bonds and the payment of dividends of 4 per cent, a surplus was left of $47,330 41, and with the previous surplus in the Treasury, the total surplus on hand is $233,134 18. There is a sinking fund to be paid in annually of $50,000 from the net earnings, which will still leave $183,134 18 in the treasury, showing that the affairs of this road are in a very flourishing condition.

Columbus and Xenia Railroad Ohio.

The Columbus and Xenia Railroad it is expected, will be prepared for the superstructure in July next and that it will be ready for the running of the cars in October following. It is the intention of the Company to lay down a heavy T rail. This road when finished will give a railroad communication between Columbus, the seat of Government of Ohio, and its great mercantile metropolis, Cincinnati. It will also form an important link in the railroad connection between Cincinnati and lake Erie at Cleveland, uniting as it does at Columbus, with the Cleveland and Columbus Road.

New York and New Haven Railroad.

The temporary arrangement between the New York and New Haven Railroad went into operetion last week. The connecting link between the two roads has been completed, and passengers are now ticketed through for $5. Coming this way passengers, upon their arrival at New Haven, take the road or the boat at their option. The cars now come into Canal st., and we hope that a permanent good understanding will grow out of this arrangement.

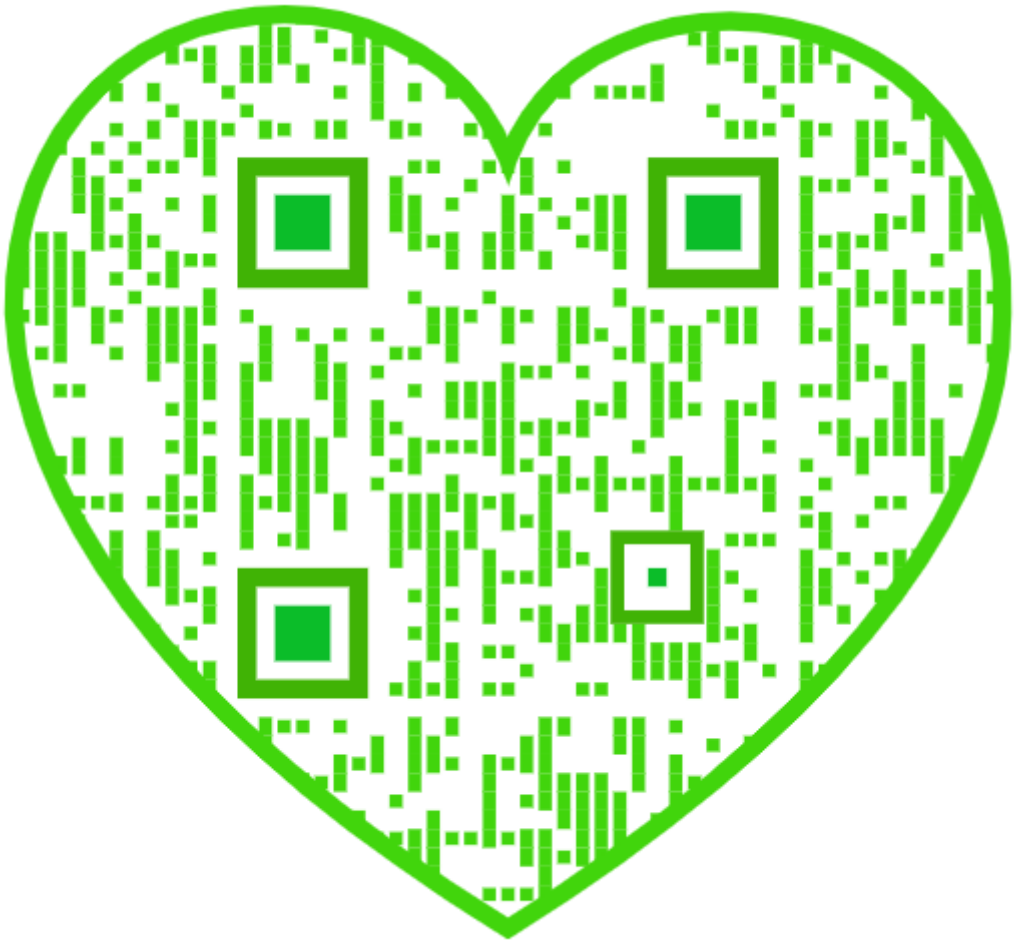
New Railroad through this State.

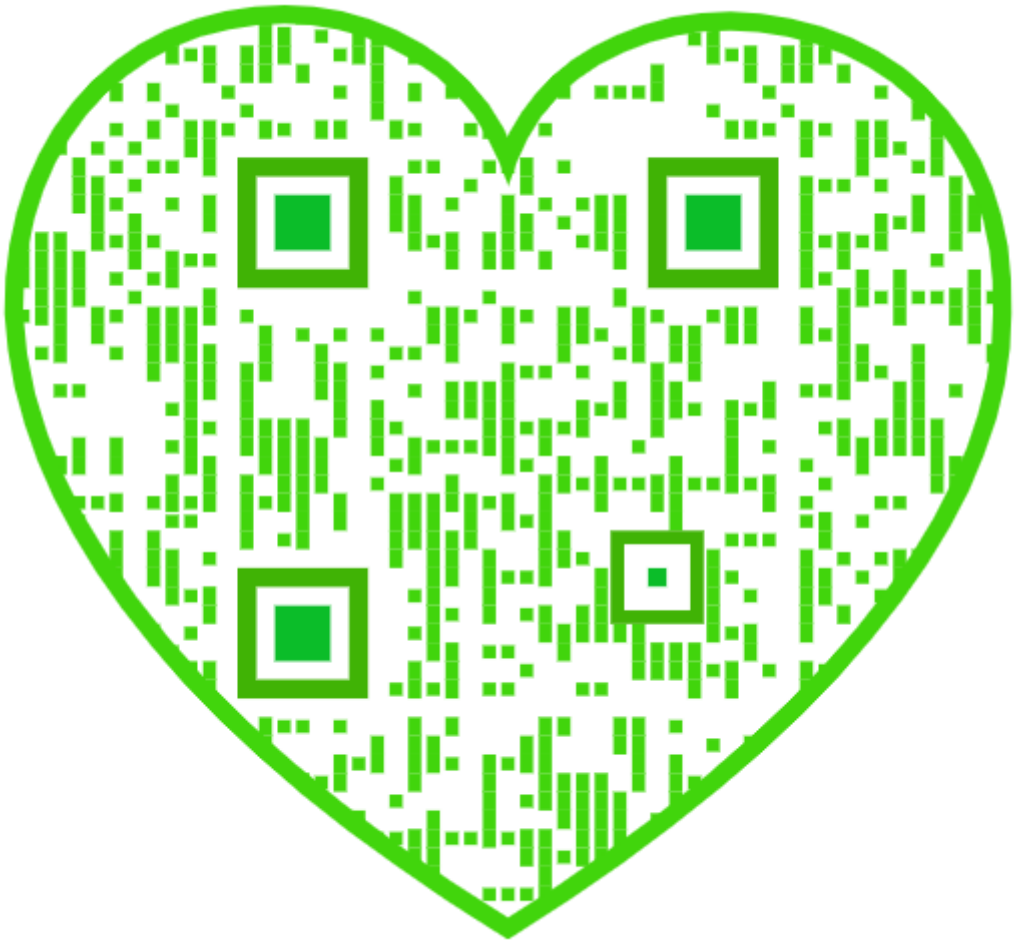
A meeting is to be held at Utica on the 15th February inst. to hear the report of a committee who have in charge the subject of the construction of a double or triple track, six feet guage railroad, as direct as practicable through the central parts of the State of New-York, and which is to be the commencement of the road which is to extend to the Pacific. We think that the narrow track will suffice the committee.

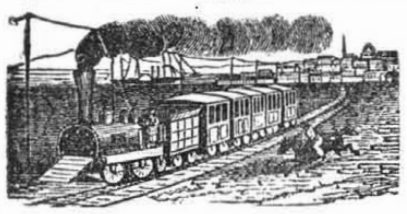
The Harlem railroad now receives from 900 to 1,000 passengers daily from the New-Haven Company, from whom they receive 14 cents each, equal to $125 to $140 per day.

The Railroad calls in Britain for the last month (January) were no less than $18,500,000—a most wonderful sum, but which by the great capitalists of that country was met with ease.

© 1849 SCIENTIFIC AMERICAN, INC







The Prize Essay.

Our friends are not forgetful of the Patent Laws and their revision. We have received quite a number of MSS. on the subject. There is room for more. The Patent Office is becoming more important every day—the business increases in the same ratio as our population. There is a great field for improvement and discovery yet before us, and while this is the case inventors must be protected in their rights. We hope that this will yet be the case. At present this is the case if the inventor has means, or some rich friends, but if not his case is a doubful one.

Those Steam Engine.

We have two more of those four horse power engines for sale. The price is $250. They can easily work up to five horse power. They are strong, neat and compact, with considerable brass work, governors and all complete, and well finished by an able engineer. Those who need such engines, and do not need a boiler, will find this an excellent opportunity te get a good bargain. A boiler can be furnished for any person who may want one, in a few weeks after receiving the order. Address Munn & Co.

Notice to Subscribers.

Within a few weeks we have received a number of letters from our new subscribers, stating that when they ordered the Scientific American they expected to receive it from the 1st number of vol. 4. It would save them as well as ourselves much trouble if in future they would be particular in stating the exact time they desire to commence. We hope they will also bear in mind that many times we are obliged to wait for a second letter from some new subscribers, from the fact that the county and State are omitted. Many of the smaller towns in the Southern and Western States, are not familiar to us, which makes in necessary to urge the importance of having the full directions accompany each subscription.

Edward Wesson.

Edward Wesson, whose name is so intimately associated with the perfection of the American Rifle, died at Hartford, Ct., on the 31st ult. His disease was inflamation of the lungs. He was only 37 years of age and bore the character of an honest man and a great mechanic. His fame as a maker of good Rifles "the Patent Loading Muzzle" is world wide—nothing can equal them for accurate shooting. His brother Mr. Daniel Wesson, takes his place and the manufacture of the rifle will still be continued at Hartford with the same perfection as before. Mr Wesson was a correspondent of the Scientific American and was a clear and smooth writer.

Borrowing Inventions.

The Boston Cabinet has found a new Inventor for our Railroad Index No. 1 Vol. 4, and the Traveller finds a New Rock Driller the same as Foster and Bailey's No. 20 Vol. 3 Scientific American. A Mr. Gouch it seems turns out to be the wonderful inventor of this The crediting of these inventions is something new, but that is all.

Devlan's New Lubricating Oil.

This is a new discovery by P. S. Devlan of Reading, Pa, the patent for which was published in our list two weeks ago It is a beautiful substance and is not equalled by any other that we have tried. We have a sample of it at this Office which every person admires. It is highly recommended by some of the very best engineers of Pa. It is far cheaper and better than sperm.

Uncultivated Land.

It is stated in the Boston Atlas that of the 4,192,000 acres of land in Massachusetts available for cultivation in some form, only 260,000 acres, or six and a half per cent are under tillage; the remaining ninety three and a half per cent consisting of woodlands, meadows, swamps, pasturage, &c.

LITERARY NOTICES.

Among the many splendid Monthly Magazines that come to us regularly, no one is more welcome than the Pictorial National Library, published by Wm. Simonds & Co. Boston.—The February number has just reached us, glad are we. It contains an excellent likeness of Gov. Briggs, accompanied by a well written biography—also a view of the new Boston Atheneum, and many other interesting historical and biographical illustrations. A complete volume of it, bound, would make a magnificent work for the table, of nearly 600 pages. Terms $2 per year. G. W. Adriance agent for New York City.

Fremont's California.

We have received from the Hon. Thomas H. Benton, a Map and Geographical memoir of Oregon and California addressed to the Senate U. S., by the conquerer of California, John Charles Fremont, whose character, without a commission in the army, stands as high as ever, and whose fame as a man of science and an adventurous traveller, is world wide. The map is a splendid one, but it must be seen to be appreciated. The memoir is a very minute and interesting description. The Bay of San Francisco is described as being magnificent beyond description. The entrance to it is through a rocky gap one mile broad at the narrowest part, called the Golden Gate. The valleys of the Sacramento and Joaquin are fertile and lovely, finely sheltered from winds and well adapted for agriculture, able to produce the fruits and flowers of South Italy. This will soon be a great country, as its natural capacities are unequalled by those of any other country on the face of the earth. In a few years at farthest, part of California will be admitted as an independent State into our Union—we hope that it will be under the name of "Fremont."

Vegetable Physiology.

We have received two pamphlets from D. Vanghan Esq. Cincinnati, designed to account for the phenomenon which takes place in the vegetable kingdom.

The New England Farmer for February is a splendid number, full of sound practical information.

The Genesse Farmer is rich as usual with useful information well and happily illustrated.

Oliver Evans's.

We may consider Oliver Evans, of Philadelphia, as the inventor of the High-pressure Engine. Before 1786, he had contrived and made experiments upon a high-pressure engine, which seems to have been in all essential respects similar to that known in England at a later period.

The Americans have taken the form and arrangement of their engines from Evans as implicitly as the English have adopted those of Watt. Evans, sanguine, energetic and persevering, was continually encountering difficulties only to overcome them; and to encounter renewed disasters and disappointments, till he at length died of a broken heart. —*Notes of American Condensing Steam Engine for River Boats.*

Safety from Lightning.

Mr. Isham Baggs, in the course of his lectures upon the phenomenon of lightning at the Royal Polytechnic Institution, London, said those "who don't mind being drenched by rain, may effectually screen themselves from the possibility of danger, when walking through a town or city in a thunder-storm by catching hold of a lamp-post, as the pipes running under ground must necessarily carry off the electricity, and thereby save passers by from destruction. He challengeed any scientific man to deny the accuracy of this suggestion.

Indian Antiquity.

The Houston Telegraph speaks of huge limestone rocks near the South Fork of the Liand, which are covered with rude paintings representing Indians Chiefs in their war costumes, horses, mules, and other animals; also, a variety of hieroglyphical figures. They are executed chiefly with vermillion and charcoal. These paintings are much venerated by the Camanches.

Launch of the Steamers Atlantic and Pacific.

These two splendid ships about which so much has been said in praise of their construction, and regarding which so many hopes are raised as to their future triumphs, were launched last week on Thursday, at the ship yards of Jacob Bell, Esq. and W. H. Brown, Esq. They are noble specimens of naval architecture, and cannot fail of reflecting the greatest credit on our ship builders. They have been built under the superintendence of E. K. Collins, Esq. whose abilities are sufficient guaranty for the perfection of the work. To Messrs. Bell and Brown belong the honor and credit of their construction, and Messrs. Stillman & Allen have obtained the contract for the machinery. We may look forward with confidence to the career of these new steamers, satisfied that no fault will be detected in their construction. The floors are solid and the frames crossed in the firmest manner and fastened together with iron braces. They will be worked by engines each having a 95 inch cylinder and 9 feet stroke. The boilers are tubular and of wrought iron framing;—wheels also of wrought iron, diameter 35 feet and 12½ feet face. Measurement of the two vessels 6000 tons; length from stem to stern 290 feet; breadth over all, 46 feet; depth of hold, 35 feet. They are intended for E. K. Collins's "United States Mail Steamer Company's New York and Liverpool Line."

Terrible Explosion of a Locomotive.

On the first inst. the steam arch of a locomotive at the Canton Station on the Providence R I. Railroad exploded, instantly killing the engineman, Mr. Lucius Cummings. Mr. Cummings' head was blown to pieces, separating it from his shoulders. The fireman received no material injury. The locomotive was detached from the cars by the concussion and ran over a half a mile, when the fireman succeeded in stopping it by means of the breaks. The escape of the fireman was most miraculous, as the forward part of the engine, where he was standing, was completely destroyed, pieces of the boiler being thrown a great distance.

The firemen was stunned by the explosion, and when his senses returned, he found that he was lying on the wood of the fender, with everything in ruins around him. He jumped to the brakes and stopped the engine. At the time of the accident the train was going about 30 miles an hour. The cause of the accident will probably be investigated. They had taken in water a short time previous. The explosion was heard at a distance of miles.

Falling of a Bell.

The large bell of Saint Patrick's Cathedral, at New Orleans, having become cracked, it was found necessary to have it recast. A solid piece of scaffolding was projected from the side under the beltry from which the bell was precipitated into the yard below, a distance of 100 feet. It came down top first, and mouth up, passing through the brick pavement. and burying itself up to the rim in the earth, without sustaining the least injury. The bell weighs two tons.

Singular Fact.

The ship Alexander, of Dundee, left Calcutta in April last for London When about a month at sea, Mr. Latta, the chief officer of the ship, while on duty one evening caught an eagle. After keeping the bird two days he proposed to Captain Inglis, the commander of the ship, that the bird should be released.—This was accordingly done. A small piece of leather with the name of the ship, with latitude and longitude, was tied to the bird's neck, and the bird took its flight. Strange to say, this same bird was caught by an American whaler 2200 miles distance from the place it left the ship Alexander. The news came to London by a ship from the Island of Ceylon, who spoke the whaler and saw the bird.

Progress of the Exemption.

A homestead bill has been introduced into the Legislature of New Jersey, and there seems to be a disposition to pass it.

Gutta Percha is becoming very common for boot and shoe soles. They are not so good as leather.

Death of Mrs. Niles.

The Paris papers announce the recent death of Mrs. Niles, wife of the American Charge d'Affaries at Turin. This lady was born in France, and married as her first husband, Doctor Sue, formerly physician to King Louis XVIII. and father of the celebrated Eugene Sue. The funeral of this lady was attended at Turin, with every mark of respect from the diplomatic corps and others. She has left twin daughters about 14 years old, on the model of whom Eugene Sue is said to have formed the characters of Rose and Blanche, in one of his most celebrated romances, the Wandering Jew.

A Texas hunter has discovered a new mountain pass between the vast ranges of the Anahuac and Rocky Mountains. He says the ascent to the summit of the Table Lands of Mexico is there so gradual that it appears like an extended plain and carriages and loaded wagons can pass from the valley of the Rio Grande to the valley of the Hiaqui as easily as they can pass over the undulating prairies of Western Texas.

The adaptation of the region about Mobile to the orange and grape culture, is indicated by acknowledgments in the Mobile papers of the recept, from Mr. Thomas S. James, on Christmas day, of parcels of superb oranges, grown in his garden; also, a bottle of scuppernong wine, the pure juice of grape.

Two evenings ago the flying machine was heard to flap its wings. This was in preparation of its flight for the gold regions. It is our intention to go in the second trip, but if all the seats be spoken, as we are not very flighty, we can patiently wait till the third trip.

A meeting of the Journeymen Mechanics of Petersburg, Virginia, was held on the 20th ult., the object of which was to oppose the competition brought about by the employment of negro mechanics.

The gold fever has reached England. Quite a number of vessels are bound from London and other parts to Francisco. They had better stay at home, they will have no chance to dig with the Yankees.

The ship Levant to leave Philadelphia next week is going to carry out 300 tons of anthracite coal as ballast.

The last news from Europe brings intelligence of the Roman Chambers having passed a a decree for Constituent Assembly of 200 members to be elected by ballot.

The laborers on the Hartford and Providence Railroad, on the Hartford side of the river, refused on Thursday last to work ten hours a day for sixty cents, and were all discharged.

The Quebec Gazette of January 22d, says that during the latter part of the previous week the thermometer fell to 22 degrees below zero.

We see it stated that a young man was recently bitten by a mad calf in one of the country towns of Massachusetts. He is now in Boston under medical treatment.

Remington has been building a bridge of 150 feet span, over the Trent in Staffordshire, for Earl Talbot. It has no intermediate supports.

What is the principle of Artesian Wells? How is it that the water rises from such great depths—such as 300 and 400 feet? Who will answer?

A new wrench is on our list of patents this week, invented by Andrew Hay of Newark, N. J. It is considered to be an excellent tool.

The Philadelphia Ledger recommends fine circular saws driven at a great speed, for surgical operations. A good idea.

The cholera has disappeared at New Orleans.

Jared Sparks, LLD. has been confirmed for President of the Harvard University.

There are oaks in California which are ever green. The Indians thrive on the acorns.

Ex. Gov. Seward of N. Y. is nominated for United States Senator.

© 1849 SCIENTIFIC AMERICAN, INC

Engravin .

(Concluded from our last week.)

Etching, that is, corrosion, is now very generally used by artists. When the main lines of the design have been drawn through the wax upon the plate beneath, a little wall of wax is raised all around the plate and diluted nitric acid is poured into the trough — The acid instantly attacks those parts of the metal which have been laid bare by the needle, whilst the rest is effectually protected by the wax coating. The bubbles as they rise to the surface are taken off, and when it is conceived that the acid has bitten some parts deep enough it is poured off, and those places are covered by a preparation which resists the acid. The trough is again filled with acid in order that it may go deeper into the lines left unstopped, and this process is repeated until the artist conceives that the chemical mixture has done its share of the work. As even a temperature as possible is preserved throughout, since it is found that the weather exercises great influence on the action of the acid. The wax coating is then removed and impressions are taken from the plate in the usual way. This is a very expeditious mode of engraving, and it is calculated that during the time occupied by the old system in executing a plate, ten may be perfected by etching; at the same time it must be admitted that the results of the etching process are very uncertain Steel is etched in exactly the same way except that a different chemical mixture is employed. Gilpin, in his essay on Prints describes the characteristics of engraving to be strength, that of etching freedom

But the majority of good engravings are now executed by means of the preceding modes in combination. Thus an engraver commences with the acid, which is allowed merely to lay a foundation, and the general effect is brought about by the burin and the dry point. Those objects which require a jagged, broken or uneven outline can be well produced by etching, such as the trunks and foliage of trees, ruined buildings, rocks, &c. Sometimes the acid brings the design very nearly to a finished state and the other tools add precision, strength and the requisite sharpness by a few touches here and there as required.

Prince Rupert has usually had the credit of inventing mezzotinto, but other claimants have been put forward. The process is quite different from any of those previously mentioned. With an instrument called a berceau consisting of a number of sharp points to whch a handle is affixed, the surface of the plate is roughened and ploughed up in every direction. This is repeated many times until the plate is in such a state that if an impression were taken it would be one unvaried mass of black tint. This is the ground upon which the artist works with his scrapers and burnishers. With these he removes the burr which the berceau has raised wherever it is desirable to do so. The more these are employed the lighter the impression from those parts will be. Consequently the deep shades are left untouched and the tools are only employed in those portions intended to be illuminated or to represent light objects. It will be observed that in the ordinary mode of engraving, the darker the shades the more the tools and the acid are used; but here the tools are employed to recover particular portions of the plate from shade. The number of good impressions which a mezzotint plate will yield is very limited. In some respects mezzotint is superior in effect to any other kind of engraving, viz. where the utmost softness, mellowness and richness are requited; as in engravings from Rembrandt's pictures. Etching is frequently employed to bite in the outlines, and when this is judiciously done the excellencies of both styles produces a happy result. See No. 18 Scientific American.

The French have invented a style of engraving of chalk drawings. The plate is prepared as for etching and the dotted effect of chalk on paper is obtained by a series of dots made through the wax by a fine pointed instrument. The acid is poured on, and the work finished by a constant series of dots made in the plate by tools of different sizes adapted to the character of the designs. Of course the effect is only meagre and poor and the good lithograph is much superior.

Aquatinta engraving is the result of an attempt to represent Indian ink or Sepia drawings. The subject is etched in after the usual manner and solutions of aqua fortis are afterwards employed to produce the washy effects. It is a disagreeable style and only employed where merely a general idea of objects is intended to be given. The shades are abrupt, and a slovenly appearence disfigures the whole.

Aquarilla engravings are an imitation of water coloured drawings. Here again etching is used to work the subject in and as many plates are required as there are simple colours. Specimens of aquarilla engravings are not often seen; they are usually characterised by the same defects as those which pervade aquatints.

Lithography was not invented until the latter end of the last century, when a poor German musician, named Senefelder, desiring to print some of his compositions at a cheap rate, discovered the process which is now so extensively employed. The stone with which the art is practised is a kind of soft limestone, of which there are large quarries in the neighbourhood of the Danube. The surfaces of the slabs are rubbed smooth against one another, and pumice stone is called into requisition to give a greater smoothness. The sizes of the slabs vary according to the drawings intended to be placed upon them, but they are generally about two inches thick. The ink is composed of tallow, virgin wax, shellac and common soap, in equal parts of two ounces each, and to these is added half an ounce of lamp black. When writing has to be done instead of adopting the tedious plan of writing backwards, a thin sized paper is covered by a brush with a compound of French chalk old plaster of Paris and starch, ground together with gum tragacanth, glue, gamboge and water. The writing is made upon this paper, which is afterwards placed on the stone. Pressure is applied and the paper being damped is removed whilst the writing adheres to the stone. For drawing, a lithographic chalk is prepared of the same materials but in different proportions. If the method of transferring is not pursued, the usual way is to trace the subject on the stone with red chalk and then lithographic chalk is passed over the lines. Weak nitric acid is then poured upon the stone to render the chalk lines insoluble in water and that being washed away, gum water is applied to prevent the chalk lines from spreading. The stone is kept damp and when the roller charged with printing ink is applied only those parts which have received the lithographic chalk or ink will take the printing ink, because that contains a quantity of greasy matter which the wet stone rejects. Paper being laid upon the slab the whole is passed through a press, and an impression is immediately produced. Plates of zinc are now a good deal used as substitutes for the calcareous stone. The process is precisely the same but the effect of lithography is considered superior to that of zincography.

New Application of Gun Cotton and Asbestos.

Mr. Robinson, dentist. in a communication to the Medical Gazette, says, "I have frequently applied collodion in severe cases of the tooth ache, arising from exposure of the nerves with perfect success when no persuasion could induce the patient to submit to extraction, either with or without the use of chloroform or either. The method I adopt is, to let the patient first wash the mouth with warm water, in which a few grains, of bicarbonate of soda have been dissolved. I then remove from the cavity any foreign substance likely to cause irritation. After drying the cavity, I drop, from a point, the collodion, to which has been added a few grains of morpha; after which I fill the cavity with asbestos, and saturate with collodion. Lastly, over this I place a pledget ot bibulous paper. In a few seconds the whole becomes solidified, and forms an excellent non-conductor of heat and cold to the exposed nerve. By occasionally renewing this, I have been enabled to effect a more durable stopping than with gold."

Manufactures in the United States and England.

The Liverpool Mail has the following observations on the competition now apparent between the manufacturing industry of the United States and that of England.

"There appears to be symptoms of a revival of trade in the cotton market, so long depressed, and that Manchester is participating in the profits instead of the losses, of increasing exports.

"All this is very well, and we hope encouraging, and for the sake of the working classes we sincerely wish that it may be a growing leading to a permanent prosperity. But truth demands at our hands some disclosures of importance, calculated to throw light upon the causes of the impetus given to manufacturing exports at the present moment, or rather, within the past month.

"It is a well-ascertained fact that the Americans are carrying on a large trade in China, by means of British or rather Manchester manuufactures. These goods are to them the medium of exchange in that distant part of the world, where they have no credit and where their capitalists if they have any are unknown. The Manchester manufactures are sold in China from 12 to 15 per cent. under the invoice price in this country,—sold of course, at a fearful loss. But at this sacrifice they purchase tea and silk, which yield a profit in the United States. Thus they assert the lost on the outward cargo, is balanced by the profit on the inward one.

"It is, then natural to suppose—indeed the conclusion is irresistable—that British manufuctures, exported direct from this country, by British merchants, must be sold at the American depreciation, that is, at the loss. Now, we appeal to any intelligent man, merchant, manufacturer or otherwise, whether this regular and most unsatisfactory trade can continue long without leading to inevitable and disastrous results."

Remington Again.

Mr. Tyler, of Surrey Gardens, London, says in a letter respecting Mr. Remington:—"My first introduction to Mr. Remington was to inspect a new light for the table, which he said he had invented. Upon his telling me that he had no funds to complete the apparatus, I—in concert with Mr. Jones gas-fitter, of Covent-garden—guaranteed to Mr. Ladd the payment of £10, if successful, all expenses of patent and bringing it before the public were to be paid by Mr. Jones and myself, Mr. Remington receiving one-half. This experiment turned out a complete failure. Mr. Remington also had £4 to redeem at one-wheel velocipede, which, after weeks' gratuitous aid of my carpenters and blacksmith also proved a failure. The bridge he said, having been repeatedly erected in America, he attached no importance to; all he wanted was an opportunity of bringing his name before the public, for he had other inventions he relied on to remunerate himself. During the whole time he was superintending the construction of the bridge, he boarded and lodged at Mr Ladd's, mathematical instrument maker, Amelia st., Penton place, to whom I paid £23 for such board and lodging and other expenses which sum I never asked Mr. Remington for. In addition to which, I hold a note of hand for £19 for money advanced. He never slept in the gardens !—he never partook of the carpenters' meals !—he dined frequently at my table. He had free access to the gardens when he chose."

How much we wish that Mr. Remington had been more cautious and modest. Every person soould be very careful of what they say or write.

Cure for Cancer.

Chloride of zinc and gypsum have been recently applied with success to cancer, by Dr. Brooks, of Cheltenham, England. The remedy is applied thus: take two parts of chloride of zinc and three parts of gypsum, and spread the powder over the surface of the sore, protecting the edges of the healthy skin with vinegar, and applying in a quarter of an hour, a soft poultice. Dr. B. reports several cases of successful treatment.

Water in which flax seed has been steeped is said to be excellent for watering flowers.

The Water Cure for Burns.

A correspondent communicates to us the following information respecting the application of water in cases of accidents by burning, which will be found worthy of attention because it is a simple statement of facts, which cannot be refuted.

While Dr. S. Guthrie the inventor of the yellow percussion powder (and chloroform) was making some experiments in Sacketts Harbor, N. Y. an explosion took place which almost destroyed the building, injuring and burning him severely. His house was soon filled with neighbours—each recommending a different nostrum, but the Doctor insisted upon being treated with cold water, a system which was rigidly carried out by his brother in law, E. Sexton Esq. The cold water was continually applied until the pain subsided, which it did about the middle of the night, when after this the wounds were treated with a mixture of hog's lard and chalk. The result was that in six weeks the bandages were removed and the Doctor had the satisfaction of walking about with a restored vision, which many people supposed had been totally destroyed.

Our correspondent remarks that Doctor Guthrie has been blown up since then perhaps a hundred times, and he found him at one time after a severe explosion at his powder mill at Sackett's Harbor, holding his face and hands in a cistern of cold water which stood under the mill. He was then entirely blinded and the skin of his face torn in strips, and his hands and arms severely burned, presenting a pitiful sight. The same mode of treatment he has pursued in every case successfully, and our correspondent adds, that he was induced to communicate this information for the benefit of others who might have the misfortune to be burned, in order they might profit by this mode of treatment.

New Railway Signals.

A new signal which has recently been the cause of several successful experiments upon the South Eastern Railway, England, is about to be extensively adopted by the management of that line. Its purpose is to cause an instantaneous communication, in case of accident or otherwise between the guards and engine drivers, or from any station or post of watch to a train. This much desired means of guarding against danger to life and property is caused by machinery so simple that it is in the power of the slightest touch to render it effective yet, the result can be heard and recognized by its peculiar note, which is raised by the forcible expulsion of air striking upon the extreme edge of a bell-shaped contrivance, for 10 miles around. It has been found that in dense foggy weather its shrill cry penetrates the atmosphere with a facility unknown to the whistle raised by steam; and as it does not depend upon the latter agency, its small and compact machinery may be fixed inside any one of the carriages far removed from the engine, and there worked by hand if desired, or acted upon by gear attached to the axle. It is said that at sea its cry for help can be heard at a distance of 30 miles; and as it is always ready, and the sound can be kept up for any length of time, at no expence beyond its first cost, it will be found of the most vital importance as well upon the mighty deep as on land.

The above is from one of our exchanges, and we have no doubt of its *starting* the attention of our railway engineers, but we have some doubts about its *alarming* them even at one mile's distance. What air striking a bell can convey the sound 30 miles at sea and on land only 10 miles? It should be heard further on land than at sea, especially in storms—the idea is preposterous.

The Growing of Cotton in Australia.

The Gardener's Chronicle an English paper, says: "I found the cotton plant growing vigorously on the Brisbane river, (in Australia,) in latitude 27½ south, from seed from America—the black or sea island seed. The cotton here is exceedingly beautiful.—The Australia cotton will be a very superior article growing in the fertile soil and the splendid climate of that region; and with the advantage of steam navigation, Australia will soon be able to undersell Jonathan in the European market.

© 1849 SCIENTIFIC AMERICAN, INC

New Inventions.

Turbine Wheel Governor.

At the meeting of the Charleston, S. C. Mechanics Association, Mr. Gregg stated that Mr. Julius Petsch of Charleston, an ingenious mechanic, had invented a Governor for the Turbine water wheel which was so perfect, that although the wheel runs at any rate doing full work, and the resistance (some machinery stopped) be lessened, that the governor acts so effectually and rapidly, that the maximum speed is not increased. The inventor planned the governor after a visit to the Northern factories with Mr. Gregg, and a Northern mechanic made the governer after Mr. Petsch's plan, who being something of a wag, wrote a letter to say that he believed it to be " the greatest governor ever conceived and after Mr. Calhoun's death would govern the State of South Carolina." This *bon mot* contains more than a witty allusion—it contains in relation to the influence which manufactories are yet destined to exercise on South Carolina, a sagacious prophecy.

Atmospheric Tube Telegraph.

Mr. Van Vechten, Editor of the Tonawanda Democrat, is now in Washington endeavouring to bring an improvement of his on the tubular telegraph, before Congress. The invention is to have strong iron tubes exhausted of their air by an air pump into which are placed a parcel or parcels of letters, so as to fit the tube exactly and let no air pass between the carriage which conveys the parcels into the vacuum formed by the air pump, so that when the vacuum is made in the tubes before the parcel carriage, and the lid open behind it, the parcel will be driven forward through the vacuum by the pressure of the atmosphere behind, which is 15 pounds to the square inch, barring the friction, but considering the difficulty (impossibility) of forming a perfect vacuum by the air pump, the effective pressure we believe will not be above 12 pounds The principle of this Telegraph is old and known, but the invention of Mr. Van Vechten relates to improvements in the parcel carriage to lessen the friction. He employs, as he told us, polished ball wheels, which undoubtedly are the very best he could use for this purpose. A model of his operates well and we should certainly like to see it fairly tested upon a large scale.

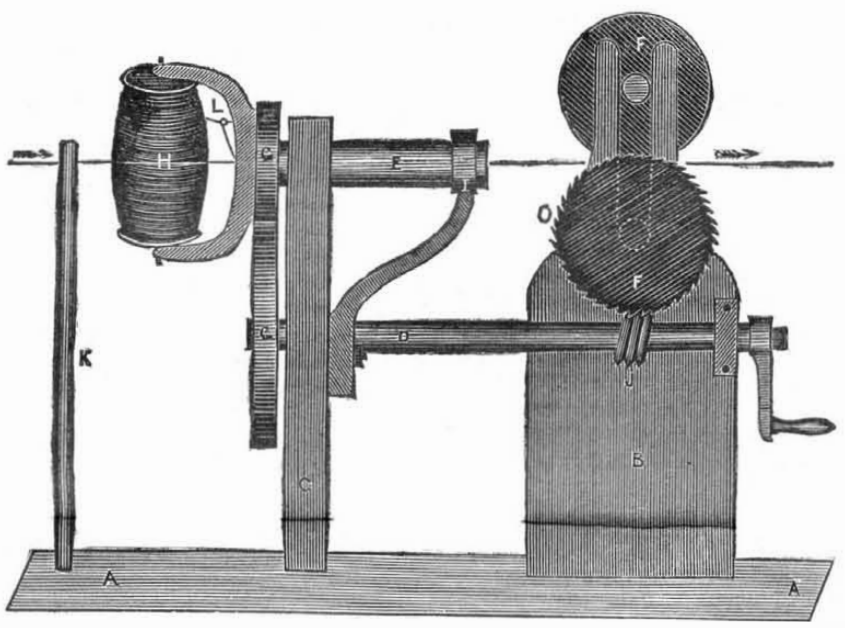
Improved Sofa Bedstead.

Mr. Abial W. Swift, 22 Rivington st. this city, has made a beautiful improvement on a sofa bedstead, whereby a double couch is combined in the seat of the sofa, which can be easily used without lying upon the cushion of the seat. The back is permanent, but the front draws out, and is connected with slides to the main body of the sofa, so that it combines strength with the economy in its use, and when the seat is folded into its place from a bed to a sofa, no person could detect its double qualities—it is perfect in each office.

Machine for Taking the Yeas and Nays of Legislative Bodies.

Mr. F. H. Smith, of Baltimore, has sent us the Report made to Congress last winter by the Committee on Public buildings, in reference to those machines presented for their consideration, for taking the yeas and nays of Congress The committee reports in favor of Mr. Smith's machine in preference to those of Messrs. S. Bowerman and R. E. Monahan. Our readers may remember a notice of this Machine in Vol. 3 Scientific American, but no particular description of its operation has been brought before the public. It consists of a metallic casket or case of two feet or more in length and half that in breadth, and can be conveniently and neatly arranged on the Clerk's desk immediately under the Speaker's eye, where it is designed to be placed. This case is composed of two steel plates, an upper and a lower one, through which small pistons of the same metal, equal in number to twice the whole number of the members of the House of Representatives, play perpendicularly, and are divided into equal sets; one set being intended for the yeas and the other for the nays, in the taking a vote. Between the two steel plates before mentioned, and above the pistons when not in operation, a roll of the House, printed on paper and specially adapted to the machine, is easily and quickly inserted, with the words *yea* and *nay* printed on the right and left of each member's name. This roll, when inserted between the plates, is readily adjusted by the guage in such a manner, that when the affirmative piston is put in operation, it ascends through the paper and cuts the word yea from its corresponding name; while the negative piston operates in like manner, and ascending cuts the word nay from the paper on the opposite side of the same name. Each name on the roll as thus adjusted in the machine, is supplied with an affirmative and negative piston corresponding to the words yea and nay, printed on the opposite sides of the name. From these pistons wires descend and are conducted beneath the present floor of the hall, which is a second or false floor, to the desk of each member, where they are to be connected with two small ivory keys conveniently arranged within a very small space, one of which is to be engraved with the word yea and the other with the word nay, corresponding to the respective pistons with which they connect. These keys are to work on the mechanical principle of the keys of a piano forte. A slight depression with the finger, of either of the keys, raises the affirmative or negative piston in the case on the clerk's desk as the member desires, and cuts out the word yea or nay according as he votes. By the insertion of an additional plate in the case, the machine can be so controlled by the clerk, as to prevent any member from moving his keys either before or after the time has been fixed by the speaker for taking the vote, so as to protect it in its operation from either accident or abuse. In consequence of the pistons and keys being fixed with reference to the seats in the hall, it becomes necessary to have the roll printed for the use of the machine, so as to correspond with the arrangement of the desks of the members, and not in the usual alphabetical order of their names.

MACHINE FOR COVERING WIRE.



This is a simple machine for covering bonnet or telegraph wire, and which may be easily constructed. There are other kinds of machines which we have seen in operation that can cover five and six wires at once, but this one is certainly not surpassed for simplicity.

A A, sole of machine, made of wood, into which are mortised the two uprights B B, only one of which is shown,—they are placed about three inches apart. C, upright frame for carrying shaft D and tube E. F F, two rollers for drawing through the wire as it is covered; the top roller is made of lead, so as to give pressure to the wire to take it through. E, tube or hollow spindle through which the wire passes. G G, spur wheel and pinion for driving hollow spindle and bobbin A. I, brackets for carrying end of hollow spindle. J, endless screw for working the pully wheel O, fixed on the outer end of the under roller F. K, support for steadying the wire as it passes through the spindle E. H, bobbin containing the thread for covering the wire. L is a small eye fixed into the frame that carries the bobbin, through which the thread passes on to the wire. In using the machine, the wire to be covered is held by the hands, and kept stretched as it is drawn through by the two rollers; another pair of rollers might be applied to keep the wire stretched, the same as the drawing rollers.

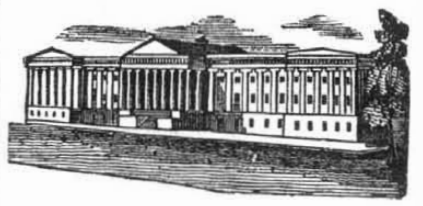
Singer's Gold Washer.

This is a very simple and most excellent gold washer. It is very compact and portable—any person can easily carry it from place to place, up to the mountains or down in the valley. It is intended to economise the water, which is very scarce in some good placers, and on this account it has no equal. It consists of a strong semi-circular vessel with 4 or 5 little receiving canals O, in the inside to let the gold settle quietly down, while the sand and dirty water passes out of D. B, is a perforated wing of half the width of the vessel and secured in bearings in the ends of the case by an axle, so as to allow the wing to be oscillated by the handle seen at the end. The inside of the vessel is filled with water, and the deposits are put into B, which is held up by a pin passing through the end of A.—The handle is then vibrated from side to side like a pendulum, when the fine particles pass through the holes in B down to the bottom of A, into the little channels and all the fine is separated from the coarse deposits. The stones and gravel are then thrown out, and D opened, so that the water is run off into a tub, while the large particles of gold are being picked up. When the water is settled in the tub, it can be returned by a dipper and may be used over and over a number of times, until it completely washes the whole deposits.

By this machine every man can work on his own account, independent and more effectually than when two or three are joined in one machine.

These machines are for sale at Mr. John Lerow's office, 112 Broadway, up stairs, and at this office, Munn & Co. Price $10.

A bill is before the Illinois Legislature to charter a company with a capital of one million of dollars for the construction of a wire Suspension Bridge across the Mississippi at St Louis.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending January 30, 1849.

To E. L. Evans, of Mount Holly, N. J. for improvement in Cooking Stoves. Patented Jan. 30, 1849.

To Alexander Parkes, of Birmingham, England, for improvement in the reduction of Ores. Patented in England Nov. 18, 1847.—In the United States Jan. 30, 1849

To John P. Hayes, of Boston, Mass. for improvement in Baking Apparatus. Patented Jan. 30, 1849.

To Jacob G. Day, of Brooklyn, N. Y., for improvement in Rail Road Trucks. Patented Jan. 30, 1849.

To Alpheus Nettleton, of Springfield, Mass. for improvement in Dumping Cars. Patented Jan. 30, 1849.

To H. G. Tyer and J. Helm, of New Brunswick, N. J. for improvement in the manufacture of India Rubber. Patented Jan. 30, 1849.

To Jos. Feinour, of Philadelphia, Penn., for improvement in Cooking Stoves. Patented Jan. 30, 1849.

To R. D. Granger, Albany, N. Y., for improvement in Cooking Stoves, (two patents.) Patented Jan. 30, 1849.

To John L. Gerow, of Marlborough, N. Y. for improvement in Cooking Stoves. Patented Jan. 30, 1849.

To A. S. Grenville, of Westboro, Mass., for improved Lubricating Compound. Patented Jan. 30, 1849.

To James Ruggles, of Philadelphia, Penn. for improvement in the mauufacture of Vinegar. Patented Jan. 30, 1849.

To Samuel Jack, 2d. of Richmond, Me, for Combined Spring Rock Drilling Machine. Patented Jan. 30, 1849.

To Charles A. Lent, of Newark, N. J., for improved Machine for making Suspender Buckles. Patented Jan. 30, 1849.

To John Sourbeer, of Mountjoy Township, Penn., for improvement in Flood Fences.—Patented Jan. 30, 1849.

To Frederick Harbach, of Cleveland, Ohio, for improved Multiple Grate Furnace for Locomotive Boilers. Patented Jan 30, 1849.

To Adam Hay, of Newark, N. J. for improved Hinged Claw Wrench. Patented Jan. 30, 1849.

To H. C. Brown, of Xenia, Ohio, for improved Roller Weather Strip. Patented Jan. 30, 1849.

To John S. Hall, of Columbus, Ohio, for Mill for rolling irregular shapes by means of a cam pattern. Patented Jan. 30, 1849.

To William Stephenson, of Cincinnati, Ohio, for improvement in Cooking Stoves.—Patented Jan. 30, 1849.

Sofa Table.

The Messrs. Briggs, of Boston, have recently invented a table sofa, which is a valuable combination of furniture, presenting the appearance of a splendid parlor sofa, but can in a moment be changed into a large dining table, and the seat of the sofa being made to separate longitudinally, from the seats for ten or twelve persons. The back of the sofa is made to slide up, and resting upon the arms, forms the top of the table.

Machine for Splitting Paper.

An Englishman has invented a method of splitting the finest paper, which in order to test its accuracy, the Governor of the Bank of England sent him a pound note, much worn, to test his skill. He delivered it next day, most scientifically and beautifully dissected into two notes!

Now this is just such a machine as we want—one that can make every dollar into two.—We are not particular about the fineness of the split.

Mountains have been discovered on Saturn's ring, by the aid of Lord Ross's telescope.

© 1849 SCIENTIFIC AMERICAN, INC

NEW YORK, FEBRUARY 10, 1849.

Mechanics Institute New York.

The apathy with which the Mechanics of this city regard institutions expressly devoted to objects of special interest to them, has always appeared to us as something passing strange. It is an infatuation for which we would prescribe a few grains of advice.

"Knowledge is power," No one can deny this. Strength may be gained by union but it is useless without knowledge,—in fact, it is knowledge which imparts the wisdom of *Union* for *Strength*. Wherever there is a recklessness among mechanics, in respect to useful information, there for a certainty is sure to be found a less elevated and noble class of men, than where there is an inquisitive thirst for knowledge and a laudable effort made to obtain it. We are angry with our city mechanics, because we have to state that out of a population of 400,000 souls in our vast metropolis—a city full of intelligence and ingenuity in all classes, that there exists but a single Mechanics Institute possessed of a tolerable Library and devoted to Science and Practical Mechanics. Yet such is the fact, and alas for the fact too, that Institute numbers only about 120 good members. Mechanics of New York, this should not be, concentrate your energies and consult your interests and rest no longer under the imputation of *apathy* to your own character and honor.

In every place but two wherein we have lived, and we have almost been a citizen of the world, the mechanics have been too much afraid of their own shadows and voices in public, hence they have allowed others to lead them, when they should have had the foremost rank. A better spirit we think is beginning to be exhibited in our city and other places, and we hope to see the New York Mechanics Institute resuscitated, as it should be, from its present condition. If one fiftieth of our Mechanics in the city would join it, they would both benefit themselves and do honor to a worthy cause.

The Mercantile Library and Association in Clinton Hall, is a standing rebuke to our Mechanics, for no complaint can justly be made against the amount required to become and continue a member. We hope to see our mechanics take up this matter in right good earnest, and fulfil their destinies.

Charleston, S. C. Mechanics Institute.

By the Charleston News we learn that a meeting was held there on the evening of the 24th ult for the organization of the citizens of that place into a Mechanics Association. The meeting was a large one and nearly every person present enrolled their names as members. We are right glad to hear of this

Mr. Gregg, a practical mechanic (we suppose the manager of Graniteville Factory,) made an able and clear statement of the objects and purposes of the association and alluded to personal experience and the superior condition of the North in manufacturing operations as an inducement for the encouragement of the South to go and do so likewise. Some of his statements, however, are incorrect, and we consider it an act of justice to both the dead and the living to set him and the public right in the matter. He says that he became acquainted with the great mechanic, Mr. J. P. Bigelow of Boston, and from his remarks, any person would be led to infer that Mr. Bigelow was the first and sole inventor of the carpet power loom and gingham loom, and that not another inventor had ever lived or was alive that had made a single improvement on these looms. He also stated that for weaving ingrain carpets, coach lace and ginghams, there were no mills in the world but those of Massachusetts. We certainly expected more correct statements from Mr. Gregg, but knowingly we are positive he would not make a wrong statement.

The father of ingrain carpet weaving in the United States was John Haight, a carpet merchant of New York, and a man possessed of great mechanical genius. He travelled thro' Britain, and brought over from Scotland a young weaver named Mitchell and commenced making carpets at Little Falls, N. J.—About 1830 Mr. Haight took out the first patent in the United States for weaving ingrain carpets by the power loom on the Jacquard plan. This patent was purchased for $50, by Mr. Bigelow in 1836 during the mercantile prostration. This we believe was the first available patent for weaving ingrain carpets and other textile fabrics which Mr. Bigelow possessed. Mr. Haight died poor about three years ago. Mr. Bigelow according to Mr. Gregg, receives a salary of $15,000 per annum. We rejoice in the prosperity of any man living, but when fortune smiled not on the dead, let not posterity rob him of his honor.

Ingrain carpets are now woven at Auburn, N. Y. by the power loom equal to those in any other State. The first patent for a gingham loom was taken out by the Rev. Enoch Burt, a man of a splendid mechanical genius, now residing in Manchester, Conn. The first gingham power loom introduced into this State was in 1838, by John Allen, from Glasgow, Scotland. He used part of Mr. Burt's invention. The finest power loom ginghams made in the United States are manufactured at Benjamin Marshall's factory, Ida Mills, Troy, N. Y., and ginghams are now manufactured in a number of places beside Massachusetts. For coach lace by power loom, Lowell is alone, we believe. We have alluded to these things because we feel sensitive respecting the honor of *true inventors*, and because we know that in too many cases "talent beats the bush and tact catches the bird."

Modern and Ancient Works.

The present age is Augustan in respect to mighty achievements in science and art. Not only are works projected now that are more grand and imposing than the greatest works of Egypt, Greece or Rome, but we seem to construct works in a day, that would have required a century of ancient labor. The Alps—the mighty Alps, long the adamantine barriers of Rome from barbarian invasion, are soon to yield to the drill and the gunpowder blast, to level a pathway through their lofty sides, smooth as a sea beach. What in ancient art can we liken to the Thames Tunnel or the Menai Bridge, but in no work whatever is the genius and energy of modern times more fully displayed than in the combination of the steam engine with a ship. When we reflect for a moment that a steam ship rushes over its ocean pathway by those very waters converted into steam, that it seems to crush beneath its circular iron feet, we may well admire the genius that gave vitality to the invention. Let them boast of ancient art who may—of ancient architecture, sculpture and painting—these are the signs of luxury and refinement and are not concomitants nor the signs of any nation's happiness or prosperity. A spinning jenny does more good to a country than a palace, and a steam engine confers more benefit than a temple. We do not disparage the Fine Arts by any means, none receives more pleasure from viewing the graceful lines of the statue or the rich blending shades of the painting, or the graceful proportions of the architect's handy works, but these are only secondary triumphs of genius.

National Convention of Inventors.

The officers of the National Inventors Institute, Baltimore, have issued a call for a National Convention of Inventors, to be held in Baltimore on the 6th day of March next. The President is Ross Winans, Esq. and R. H. Middleton, Esq. is Recording and Corresponding Secretary.

The inventors and mechanics of the city of Baltimore having the co-operation of benevolent capitalists and men of science, have formed themselves into a joint stock company, entitled "The Inventors National Institute."—The object of this association is the same as the one organized in this city in 1847, and which so signally failed, although men of unquestionable respectability were enrolled as members. Our friends in Baltimore know but little about the task before them. They have a proviso in their articles of organization, which will prevent many inventors we think, from being connected with them. It is Art. 2. To furnish true and original inventors, when required, with advice, the means of sustenance, materials, &c. whilst maturing their plans, or in search of any given object, when expedient, (by and with the advice and consent of the Institute) the inventor having first described his plans and assigned some portion of his invention to the Institute and entered on file his caveat.

The Institute is to give counsel and advice (for a fee,) to have schools, workshops and exhibition rooms, and a vigilance committee throughout the United States to give information of infringements, and they are to be the grand fountain of improvements in the Patent Laws.

We would publish the whole Circular, but our space forbids. We would like to see a good Inventors Institute in successful operation, but the projects of this one are too vast and varied to form (in our opinion) the ground work of confidence in its success.

The Telegraph Controversy.

MR. EDITOR.—Permit me to ask for information about the telegraphic dispute between Professor Morse and Mr. Bain. Is that dispute settled, and has Professor Morse received a patent—as I have been led to suppose that he had from the tone of the Scientific American, that the Commissioner had decided in his favor against Mr. Bain.

You also say in No. 16, page 123, in an article which I have read with peculiar interest, that "if Mr. Bain does not receive a patent, the end of this controversy will be, that an electro chemical telegraph, simple and effectual, will soon become the public property of the whole people of the United States."

Do you mean to convey the idea, that any one who chooses can employ an electro chemical telegraph, if Mr. Bain does not receive a patent. On this point particularly I would respectfully wish to be more enlightened.

Yours, B. M R.

Boston, Jan. 30, 1849.

[The passage which B. M. R. has quoted, conveys as it reads, the idea of universal property. But without Mr. Bain's consent no person can use the prussiate of potash to prepare the receiving paper, and there is no other salt that could be effectually used for the purpose. This is claimed in Mr. Bain's patent already secured for the United States.—We have said so much upon this subject already, that we have no wish to say any more about it—Mr. Bain will, we think, receive a patent.

In the late application of the Electric Clock to astronomical telegraphing, our country is deeply indebted to Mr. Bain, the original inventor, who invented the same in 1840, and which is described in vol. 2 Scientific American. The controversy between Professor Morse and Mr. Bain, is soon to be brought before Judge Cranch for decision—his decision will establish the right to a patent.—ED.

Telegraph Across the Atlantic.

A memorial was presented to the Senate on Monday the 27th ult., asking for an appropriation for the construction of a telegraph from Nova Scotia to the coast of Ireland on the submerged table land which was stated to have been discovered to exist between the two continents. The memoralists propose to enclose the telegraph wires in cork tubes and anchor it at ten miles apart. This proposition is as feasible as going to California in a bag of hydrogen gas.

No telegraph wires that have been laid across the channel of any of our rivers have worked well, and what will we expect from those laid down in the bottom of the sea a distance of 2000 miles. The Coast Survey should also make the necessary explorations about these fishing banks, which are said to extend from Newfoundland to Erin's Green Isle. Probably such *banks* may be like to many others only *speculative*. The best way to cover telegraph wire (the only way in fact) to isolate them entirely to repose on the beds of rivers, is by Hill's patent process described and illustrated on page 225 vol. 3 Scientific American. This is the plan employed in isolating the wires that are laid across the Irish Channel to Ireland.

Patent Cases.

On the 1st. inst. in the U. S. District Court Philadelphia, before Judge Kane, a perpetual injunction was granted against Arthur, and George, on a bill of equity for infringement of Woodworth's patent planing machine. The complainant was Mr. Wilson the owner of the patent.

The decision of Judge Catron in regard to Morse vs. O'Reilly, which we noticed last week, was given on an application made for an injunction against the Telegraph lines between Memphis and New Orleans, working with what is called the "Columbian Instrument" of Zook & Barnes.

The Judge based his decision upon this very interesting point, viz. that "it was his opinion an injunction should never be issued where the facts are disputed, and when the patent has not already stood the test of a law suit."

The meaning of this is, that a machine may be in operation, which a patentee may say is an infringement of his patent, while the person using the machine (owing to its being differently constructed) may deny that any of the principles of the patent are infringed—that his machine is a different invention. Judge Catron, we think, is sound upon this point. The question of infringement should be decided by competent referees who can discern between the principle of the patent and the machine in dispute; but when this is decided let there be no hesitancy about an injunction.

The great Car Wheel patent case in the U. S. Circuit Court, Boston, Many vs. Sizer, was decided by Judge Sprague on this point, "that the plaintiff's invention did not lie in any of the parts of the wheel, nor in a combination of these parts, but that his claim was for the whole thing as an article; and that the patentee was not confined by his specification to any particular degree or kind of curve, but that all kinds of curves and arrangement of plates were within his patent."

Manufacturing in the South.

The South is awaking to the advantages to be derived from manufacturing skill, and are beginning to know, that skilful mechanics must be intelligent mechanics In South Carolina, cotton can be worked up into coarse fabrics for 4 cents per pound. Our manufacturers at the North have here a competition to which foreign competition is as nothing.—Would it not be well for our Northern people to turn their attention to the manufacturing of fine linen. This is a beautiful fabric, and certainly its successful manufacture would be a great benefit to both our Agriculturists and Manufacturers.

Extent of Oregon.

It appears by official documents, that on the east it skirts 8000 miles along the Rocky Mountains; on the west 7000 miles along the Pacific Ocean, on the North American possessions of Russia and England. The area of this immense valley, contains 350,000 square miles—capable, undoubtedly, of forming seven States as large as New York, or forty States of the dimension of Massachusetts.

Back Volumes of the Scientific American.

A few more copies of complete sets of vol. 3 of the Scientific American may be had at the office, either bound or in sheets. Price neatly bound $2 75, in sheets suitable for mailing $2. The second volume minus 4 numbers from being complete we can furnish for $2 bound, or in sheets and mailed at $1 50. Send in your orders early if you desire them filled for we have but a few more copies left of either volume, and the number is growing less every day.

THE
SCIENTIFIC AMERICAN.

Persons wishing to subscribe for this paper have only to enclose the amount in a letter directed (post paid) to

MUNN & COMPANY,

Publishers of the Scientific American, New York City.

TERMS.—$2 a year; ONE DOLLAR IN ADVANCE—the remainder in 6 months

Postmasters are respectfully requested to receive subscriptions for this Paper, to whom a discount of 25 per cent will be allowed.

Any person sending us 4 subscribers for 6 months, shall receive a copy of the paper for the same length of time.

© 1849 SCIENTIFIC AMERICAN, INC

For the Scientific American.

Influence of Factory Life.

Various opinions are entertained in relation to the influence of "Factory Life," as it is sometimes called; some extol it, while others speak all manner of evil against it. But, if the advantages and disadvantages—the lights and shades, were fairly set forth, it would appear that these factories are neither Paradise or Pandemonium.

A manufacturing population is as free and independent, and as pure in their morals, as any other class of people under the sun. Nor, is it pretended that they are exempt from the evils incident to other laboring classes.

But, in an intellectual point, it is proposed to show that those employed about machinery in shops and factories reap an advantage over most other pursuits, arising from the peculiar nature of the occupation.

It must be obvious to the reflecting mind, that human character is moulded and fashioned to a great extent by the persons and things with which an individual is surrounded. It is essentially modified by the kind of employment pursued, by the facilities for performing labor, by manners, customs and fashions, by a curtailed, or free exercise of the intellect, and by hindrances or facilities to the enjoyment of liberty.

In the first place, let a few occupations and positions in life be adverted to by way of illustrating the subject. For example, it has been said—and with truth no doubt—that the study of mathematics is excellent discipline for the mind, because, it engenders a precise and accurate mode of thinking and reasoning Some kinds of employment require more accuracy than others; and, the occupation itself, in turn, reflects back upon the mind again, its own proper influence.

The farmer, for instance, in turning over the furrows in his field, or repairing his plough or cart, does not exercise all that precise mechanical skill and critical acumen, that the machinist brings into requisition, in nicely fitting the complicated parts of the steam engine; or the watchmaker, in adjusting the minute and intricate movements of he watch; nay,—and this is a point particularly to be noticed—the former occupation does not generate in the mind that nice perception and criticism, which is called into exercise by the latter. But this is no disparagement to the farmer. He may drink in the richest influences from wavy plain, and glassy lake, and purling brook, aud pine clad mountain, and sweet music of birds, tending to inspire the mind with cheerfulness, and, with love to the Maker of these glorious works. The denizens of the shop and mill are not permitted, habitually, to enjoy these scenes. The defect must be otherwise supplied.

It is also observable that those who are compelled to do any kind of work against their will, are apt to become fretful and discontented, Those, too, who are always domineered over and driven—as is the case in some factories in England—and hope for nothing better, exercise but little self control or discernment. Let managers and guardians look at this matter. If you would have respectful and trusty persons about you, you must respect them, and let them perceive that you have confidence in their integrity and ability.

Locality and climate also, produce indelible peculiarities. The dweller under a mild Italian sky, while he gazes into the pure, clear deep vault above him, and beholds the unsurpassed beauty of those nocturnal heavens, catches no small degree of that poetic ardor so characteristic of those people; for, who can "bind the sweet influences of Pleiades, or loose the bands of Orion?" Who does not see that the inhabitant of the frigid Zone, must be a very different being from him who dwells under a more genial sky?

It is also true, that convenient tools, implements, and machinery, tending to facilitate the performance of labor, have their appropriate influence. The man who works all his days—at a vast disadvantage—with nothing but a pod augur, a jack plane, and a hatchet, must be a differently organized mechanic from him whose chest is filled with a *full* and elegant sett of tools.

Likewise, manners, fashions, customs, and architecture, all have their effect. What pleasing emotions are inspired in the mind on beholding—at sufficient distance for the mind to take in the full idea, some grand and beautiful temple, massive and proportionate—all its parts perfectly balanced and harmonized; sitting upon the earth like a thing of life, with an air of sublime and majestic repose.

What has been said of inanimate may also be said of living forms of beauty, in affecting character. Who does not feel delightful sensations stirred within him, when beholding some beautiful specimens of humanity—a creature whom God himself hath made—young and fair, whose form is love, whose gaze is feeling;—and whose every appearance warrants the belief that she would prove a successful rival, even for the Medician Venus,—the curved lines of whose fine limbs flow into each other in a continuous sinuosity of sweetness, exhibiting at once, matchless symmetry and proportion; and, with a countenance radiant with affection and inocent voluptuousness,

——"Heaven in her eye,
In every gesture dignity and love."

Who, unless they be frigid indeed, are not influenced more or less, by the magic face and form of human beauty?

Now then, if what has been said above be true, if locality and climate, if the beautiful in nature and art, if manners, customs, and fashions, all have their influence upon character for good or for evil,—if the pursuit of certain sciences, as mathematics for instance, have a tendency to induce exactnesss in the mind, may it not be fairly argued that those employed in Machine-shops and Factories, experience the same sort of discipline as that generated by the study of the exact sciences? Persons thus employed have their minds continually brought in collision with movements regulated by mechanical and mathematical laws, requiring great precision, promptness, and punctuality on the part of the operator. As a mistake of a single *plus* or *minus* in mathematics is attended with mischief,—so, too, the machinist, if he errs in a single point on his index in cutting a geer-wheel, the work is spoiled. Also in the Factory, slight inaccuracies in the change of draft pinions ,or other important geers, is attended with disastrous effects. There only remains to be added—in support of this argument the writer's own personal observations and experience, in Machine shops and Factories for nearly twenty years. It has been observed when persons—both males and females, have come from the country to work in the Factory, some of them remarkable for nothing perhaps, as a loose and slovenly method of performing their labor; who, after remaining in the mill a few years, have become the very reverse: and, on returning to their homes, have carried with them—into their households, and to their farms, the systematic method of doing business generated by Factory life. E. B. M.

Manchester N. H. Jan. 23, 1849.

A Great Plan.---Railroad to the Pacific.

Charles Ellett, Esq. C. E. has written a long article to the North American and U. S. Gazette on the subject of a Railroad to the Pacific. We consider it to be the most sensible article that we have seen on the subject. He points out the folly of a private corporation being empowered with one hundred and twenty thousand square miles of territory for its construction—it never will do in this Republic. Even at that rate the whole scheme if attempted would prove abortive for good.

Mr. Ellett proposes to have a great central continued road from St. Louis terminating at San Francisco in California, but he proposes first to construct a plank road on which carriages could travel at the rate of 7 miles per hour and would enable travellers to go from St. Louis to San Francisco in 18 days, and all that is then needed to enable locomotives to traverse it is a couple of strips of scantling pinned down to the plank, and covered with a plate of iron. By adding the rails, even without the iron, a light locomotive and cars may be put on every section that is commenced and used to transport the materials for the extension of the line. The road can thus be built by steam.

To construct even such a road as this through a wide wilderness and waste is truly a great undertaking,—but not too formidable to be accomplished by the force and energy of this country skillfully applied, in less than two seasons. In the brief space of two years from the day when the directing head is commissioned to proceed with the work, the representatives of the government may be taken by steam from Washington to the Pacific in ten days, and deliberate, if they choose, on the affairs of California in the gold region.

Parties of navies will proceed to different sections. Each body of the operators, headed by a contractor and directed by an engineer will be provided with one or more locomotive saw mills—light locomotive engines, with gearing to drive the saws needed to cut the plank required for the road. A few cars will transport their supplies and bring the lumber to extend the line. Camp, cuisine, saw mill and provisions are all moved by steam along the track which steam has made.

Along with this movement a detachment of skilful Engineers will proceed to the base of the Rocky Mountains to explore and compare the passes over that dividing ridge.

The telegraph will precede the road and follow the steps of the exploring parties through the South Pass, if no better is found.

There are no difficult rivers to arrest the line: but such as there are must be crossed by bridges. The forces can be sent to St. Louis, and suspension bridges constructed there and forwarded complete to the spot before they are needed.

Apply the force employed on the march to Mexico—apply only 10,000 of all the men sent into that foreign field—to this glorious work, and the road will be made as fast as that army proceeded on its way to the enemy's capital, and for one half of the cost of that single march.

What a glorious career of conquest would here be offered to ambition: the lasting fame of the country, based on the extension of civilization from ocean to ocean; the commerce of China and India grasped at once; our possessions in Oregon and California secured for ever.

The Mississippi and its waters will furnish the steamboats to convey the throng, and the locomotive will be heard on the shores of the Pacific, and the trade of India and China will be won by democrat energy, before astonished Europe will dream of a serious beginning.

This whole work can be accomplished in two years, at a cost of some ten millions of dollars—less than, the newspapers say, has been expended during the past year on lines tributary to the city of Boston alone.

Subterranean Canal between the Atlantic and Pacific Oceans.

The following story is going the rounds of the newspapers, and to us it appears far more wonderful than plausible

A French physician established at Vera Paz, who, beside practising medicine, has the charge of extensive farming estates, upon making some excavations, undertaken with a view of forming a canal through which to carry his produce to the sea, discovered at the the bottom of the bay of Honduras the opening of a monumental canal seventy-five meters wide. (about two hundred and forty feet,) and running in a straight line towards the southwest, its sides being constructed of enormous stones rudely cut. The two walls which continue parallel, had been followed to the distance of several leagues.

Having reached the foot of the mountains, where the volcano of Fuego is now in activity, and having cut away huge trees that obstructed the entrance, they passed under a vault of 100 metres in height, (about 335 feet) and of the same width as the canal. Nothing among the ancient Cyclopean structures in Greece could give an adequate idea of the tremendous masonry of the walls of this vault. The canal was filled with salt water, twenty metres deep. Our intrepid countryman did not hesitate to embark with some Indians in a pirogue, which he caused to be brought to the spot and eighteen hours afterwards, (if the story is to be believed,) he entered the great ocean, (the Pacific,) between Gautemala and San Salvador, through an immense natural grotto, called by the fishermen of that coast the Devil's Mouth, which superstition had deterred them from ever entering. The whole vaulted part of this superhuman structure was lighted by shafts, cut through the surface above, and through its whole extent it is navigable for the largest ships.

Trade Winds.

In the midst of the North Atlantic, (says Lieut. Maury,) a regular monsoon has been discovered and its limits are already defined with more precision than those of the Gulf stream have ever been.

The northeast trade winds form an atmosperical band in the North Atlantic with surprising regularity of breadth. Were this band opaque or were it visible to an astronomer in the moon it would appear to him not unlike the belts of Jupiter do to us but upon a scale greatly enlarged. Could it be seen by an observer in the moon he could mark our seasons by it, so regular do the materials already furnished show its vibrations up and down in latitude to be according to our months and seasons.

This band of northeast trades is not, as has been supposed, parallel to the equator. It is parallel to the ecliptic. The manner in which these conclusions are arrived at admits of no more doubt as to these facts than there is as to the existence of the trade winds themselves.

The Introduction of the Potato and Flax into New England.

The Manchester (N. H.) Democrat says:—"Probably no one of the towns of New-Hampshire has furnished a larger and more industrious body of citizens whose descendants are now scattered to every part of the State, to Vermont, and not a few of them to the far-off West, than Londonderry. This township, formerly including the present town of Derry, was settled in 1718 by a colony of Presbyterians from the neighborhood of Londonderry, in the north of Ireland, to which place their ancestors had emigrated from Scotland about a hundred years previous. These colonists came over to this country in the Fall of 1718; and early in the Spring of the next year, sixteen families moved up to Nutfield, as it was then called, and on the day of their arrival attended to religious exercises and listened to a sermon from their first minister, Rev. James McGregor. This first meeting was held under an oak on the east shore of Beaver Pond. The settlers then purchased their title of the Indians, and though Londonderry was for a long time a frontier settlement it was never attacked by the savages. The settlement of Londonderry was a new era in the history of this State. The new comers introduced the culture of the potato, a vegetable till then unknown in New-England. They also introduced the raising of flax and the manufacture of linen cloth, which although now superseded by that of cotton was for 70 years no inconsiderable source of prosperity. During the Revolution, the citizens of Londonderry took an early and active part in favor of independence. Seventy of them were in the battle of Bunker Hill and about the same number at Bennington. John Stark, Col. George Reid and Capt. David McClary who was killed at the battle of Bennington, were natives of Londonderry."

Importance of Study in Youth.

Sir Walter Scott says, "if it should ever fall to the lot of youth to peruse these pages let such a reader remember that it is with the deepest regret that I recollect in my manhood the opportunities of learning which I neglected in my youth; that through every part of my literary career, I have felt pinched and hemmed by my own ignorance; and I would at this moment give half the reputation I have had the good fortune to acquire if by so doing I could rest the remaining part upon a sound foundation of learning and science."

Sensible Joke.

Somebody asked the Baron Rothschild to take vension—"no," said the Baron, "I never eatsh wenshon: I don't think it ish so coot ash mutton." "Oh!" said the Baron's friend, "I wonder at your saying so; if mutton were not better than venison, why does venison cost so much more?"—"Vy?" replied the Baron, "I will tell you vy—in dish world de peoples alwaysh prefers vat ish *deer* to vat is *sheep*."

© 1849 SCIENTIFIC AMERICAN, INC

TO CORRESPONDENTS.

"A. G. of Ill."—We will be happy to hear from you at any time in respect to any thing you deem interesting to the mechanic and man of science. Mr. S. Guthrie, sent us a letter detailing exactly the incident you relate, with the exception of his mode of treatment when burned by the explosion.—Saltpetre of itselt will not explode. The saltpetre, pearlash and sulphur, you will observe contains all the essential ingredients ot common powder. The carbonate of soda will answer better than the pearlash. Saltpetre and sugar form an explosive compound.

"C. D. H. of N. H."—Your request cannot be complied with. The demand for the Camera Lucida is as great as we can supply for the present without sending them out to be sold on commission.

"W. L. of Phila."—Yours will appear next week—just came one day too late for this week.

"C. D. G. of N. H." and "H. D. F. of N. Y." —Your funds and models have come to hand, but we should not advise you to be at the expense of applying for a patent. The latter invention is much more novel than the former one, but we should not deem it advisable to petition for a patent even on that.

"R. L. of N. Y."—Your model has been received and your business is progressing.

"J. B. G. of Mass."—Your model has come to hand and we shall proceed with your business early next week.

"R. C. of Mass."—The model of your invention we have returned to you for alteration, and in the box with it is a letter of instruction as to the necessary alteration.

"J. P. of Mass."—Your plan for a common road carriage on a pedemotive principle is no doubt an improvement on the one represented in No. 47 vol. 3, and we should be pleased to hear your success as you get further advanced in your experiments. The Commissioner's Report for 1848 is not yet published.

"C. McC. of Pa."—We regret to inform you that in consequence of the illness of the examiner to whom your patent business was referred your specification has not yet been completed. We are sorry to disappoint you by not sending your papers at the time they were promised, but for the reason above stated we have been obliged to leave the documents partially finished in hopes daily that our examiner would be able to renew his labors and complete the business commenced for you — In a few days you shall hear from us again and receive your documents for signature.

"W. M. of Ala."—We are happy to know that the "Scentific American" is deemed by you so valuable. The Saw mill to which you refer was sold previous to the reception of your letter. Those engines of 4 horses power advertised by us are capable of working the power of full 5 horses and we should think for the purpose which you desire one that they are just the thing you need. They are of the most improved modern construction and of superior make, and for a price of $250 are much cheaper than we are often able to furnish engines of that capacity and quality.

"H. P. O. of Pa."—The Camera Lucida was shipped according to order and hope you will receive it in good condition. We have examined your principle of the propeller and would advise you not to spend much money upon it as it is not likely to become generally introduced. You no doubt possess many good mechanical ideas, but an invention like yours, will require considerable of an outlay in experimenting upon it as well as a great sacrifice of time in introducing it. You may consider our advice as well intended.

"A. B. W. of Mass."—Your rotary will appear in the "Scientific American," as the history progresses, at which time it will undergo a thorough examination, the result of which due advice will be given. It will remain safe in this office, you need have no fears.

"J. R. of Mass"—The engraving of your shoe pegging machine is received but it does not explain the invention sufficiently for our purpose. The cut should have been lettered that every part of the machine might not only be represented, but explained. We don't understand the machine at all from your engraving and we shall not be inclined to publish it.

"N. B. of Leverett."—Your improvement doubtless presents some advantages. But we cannot positively decide upon its value, without a model. A rough draft like the one furnished by you, fails to enlighten us upon the construction and operation of your invention. If you can furnish a model send it prepaid by Express

"R. H. of Ky."—We would gladly furnish you the information if possible to obtain it in this city. By communicating with Mr Spaulding of Lockport, N. Y. you can probably ascertain all the particulars in regard to its construction, price, &c.

"L. B. W. of N. H"—In answer to your enquiry we say yes. The $20 includes every expense necessary to the completion of your application. Your model will be looked for at the time mentioned.

"J. J. of Ky."—The Scientific American as you justly observe, is the great Mirror of American Inventions and Discoveries. We wish to to let the world know that genius belongs to our country,—let all those who have facts to communicate consider that our Country's honor is mixed with our labors.

"E. H. of Mass."—The expression in reference to the *lathe* of the loom, had no reference to your application or use of the word—you could use no other so well, but as a term for the purpose it is a common wrong one, like many others. We hope you are getting up a model. There is one thing about a loom worthy of attention, viz. the power of the shuttle which has to be arrested every stroke, what a loss—but we can see no way to remedy the evil, for a rotary motion cannot be applied to weaving.

"A. B. of Va."—What has become of you —are you all well?

"G. W. of Pa."—We have received yours. The French Turbine is highly esteemed, perhaps above all others. The spiral, or archimedean wheel has a decreasing diameter of bucket. We shall publish it next week. The rotary engine is very interesting to many inventors. The cylinder one is still unsurpassed by all the modifications we have seen which are numerous.

"E J. H. of Maine"—We believe that there is no double acting engine in operation propelled by atmospheric pressure, the atmosphere driving it, as steam does the steam engine. There is a hot air engine in England—the only one we know of.

"W. C. of N. J."—We cannot publish your article because the foundation of your argument is wrong. The tides are not caused by the diurual motion of the earth. Such a motion could not produce the tides. And were this the case, your conclusions are incorrect, your reasoning would lead a millwright to suppose that a water wheel in Paterson that produced a certain speed in all the cards, strippers, doffers, spindles and looms in the factory during the first revolution in the morning, would require a constant increase of water power to keep up the first speed during the 12 hours per diem.

"L. H. of Missouri."—The employment of short-word type has been tried many times. It is called Logotype. It never was successful—for reasons see History of Printing.

TO DRAUGHTSMEN AND SPECIFICATION WRITERS.

☞ Two or three gentlemen who are conversant with the Patent Office business and can produce unquestionable reference as to their ability to make drawings and write specifications may have constant employment at this office.

To those who have been engaged as examiners in the Patent Office we would pay extra salery and engage their service for a length of time.

Address MUNN & CO. Scientific American, N. Y.

No person need apply unless he can pass a thorough examination as to his ability to fill the station for which we desire him

POWER LOOM HARNESSES.

Middle Street, Newburyport, Mass.

WILLIAM DICKINSON Jr. would most respectfully inform the manufacturing public that he has commenced the "Hed le" making business in all its branches and is prepared to receive orders for all kinds of Harnesses which will be executed in a superior style and on terms as reasonable as at any other establishment (including Cotton and worsted, plain and fancy harnesses for weaving every kind of goods.) Agents and other who are intrusted with orders of this kind may rely on having their work done promptly and in a satisfactory manner.

N. B. The subscriber having had fifteen years experience in the harness making business in England and upwards of six years in America hopes this will ensure him a share of public patronage. f10 6t*

A SPLENDID WORK.

☞ We have just published a work on the American Condensing Steam Engine which we take pride in saying has been pronounced by good judges to be the richest work on the Steam Engine ever published in America.

The diagrams of the Engine are represented on a large sheet of 38 by 28 inches, in size and present to the eye two distinct views, with their parts in elevation and in section, all strictly accurate, of a Condensing Engine as applied to our River and Sound boats. All the internal parts are also represented and a full description given in a book, which accompanies the drawings. The diagram was designed and drawn by Mr. Frederick Cook, a well known draughtsman of this city.

Published and for sale at this office by, MUNN & CO Price complete $3. They may be sent by express to any part of the United States. j27 tf

FOR SALE.

A Lathe for turning flat surfaces that will answer Brass, Copper, Lead or Wood.

A plate of metal can be brought to an even and flat surface and of any desired thickness by passing it once through this machine which is done with great expedition, the Lathe is in good order, with two sets of knives. Cost in London $300, will be sold at the low price of $50, as the owner has no further use for it. Apply to WELLS & WEBB, corner of Fulton and Dutch st. f10 3t*

To all Persons interested in Wood Planing Machines.

THE Undersigned having discovered a new and simple arrangement, by which to effect the matching or tongue and grooving of boards or plank; takes this method to inform those interested that it is superior to the cutter wheel. My object is to interest men who have the means, and disposition to take hold of the matter in earnest; and I think there will be but little difficulty in completing a machine about which no questions of law for infringement can arise.

For particulars address JUNIUS JUDSON, Buffalo N. Y. f10 2t*

E. NEVILLE, WOOD ENGRAVER.

122 Fulton st. corner Nassau.

☞ The above is prepared to execute all orders at the shortest notice and on the most reasonable terms.

SUPERIOR TURNING LATHES.

JAMES STEWART, 15 Canal-st. and 106 Elm-st. is constantly manufacturing and has now on hand between 50 and 60 superior lathes of the following descriptions and at reasonable prices. namely:

Dentist's Lathes, very highly finished.
" " common,
Brass and Wood Turner's Lathes.
Jeweller's and Pencil-case maker's very superior.

J. STEWART is also authorized to act as agent for the sale of the celebrated Lathes manufactured by James T. Perkins of Hudson, of large size and at prices from $250 to $800. A specimen of this description may be seen at his factory as above. j27 tf

To Locomotive Builders or R. R. Co.'s.

THE undersigned would like to dispose of one half of his interest in a new invention called the "Radical Self-acting Collision Preventative Apparatus." It is an invention of rare merit as the inventor is ready to prove by various demonstrations. One of which is by a model. It is such a perfect anti-colission apparatus that no injury to passengers or cars need be feared even if two trains should meet while running at their usual speed. The inventor would like to associate with a partner for the purpose of immediately constructing the apparatus.

Address W. FROCHLICH, Engineer,
f3 3t* Navy Yard Washington, D. C.

A Premium and Diploma were awarded by the New York Renssalaer Co. Fair, to S. Lichtenthaeler, for his patent Blind fixtures, being an apparatus for Opening and Shutting outside Window Blinds, from the inside of the house, without raising the sash.

Persons desirous of obtaining patent rights of this invention for any of the Southern or Western States, will apply to the undersigned Patentee (the rights for the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Michigan, Ohio, Pennsylvania, Delaware, Maryland, the 11 northern counties of New Jersey, and the District of Columbia, are all sold off)

S. LICHTENTHAELER.
Litiz, Lancaster, Co., Pa.

NOTICE.—All power of attorney given to C. H. Farnham, has been cancelled, and is hereafter null, and void. and he is therefore no longer authorized to sell, or transact any business appertaining to the above invention for me S. LICHTENTHAELER.
j27 2m*

SUPERIOR ENGINE LATHES.

WE are manufacturing and selling at our establishment in New London, Ct. a superior article of Screw Engine lathes and also hand lathes of every dimension at an extremely low price.

Address ALBERTSON, DOUGLASS & CO.
Post Paid. [d2 6m*] New London, Ct.

DICK'S ANTI-FRICTION PRESS.

THIS Press, which was patented in October last, combines great simplicity of construction with intense severity of operation, compactness, convenience for use and cheapness, and is admirably adapted to a great variety of purposes, such as pressing Oils, Cotton, Tobacco, Hemp, Hay, Cheese, Cloth, Paper &c.; Baling goods; Embossing and Printing; Envelope Cutting; Jeweller's work; Shearing Metals; Hoisting vessels into docks; Gumming Saws; Making Lead-pipe; Punching, Rivetting and Cutting Iron &c. &c. &c. Orders and Communications to be addressed to WM. D. HARRIS,
j6 3m* Agent for the Patentee, 138 Front st. N. Y.

SOAPSTONE DUST.

FINE Bolted Soapstone Dust; also Charcoal, Anthracite, and Black Lead Dust, to give Iron Castings a fine face; and Sea-Coal Dust to mix with sand to make the sand leave the castings easily: always on hand in Barrels ready for shipment by

G. O. ROBERTSON.
j20 4teow* 283 West 17th st. New York.

STEAM BOILERS.

BENTLEY'S Patent Tubular and other Boilers of any size, shape or power, made to order, by

SAMUEL C. HILLS & CO.
n8 43 Fulton st.

GENERAL PATENT AGENCY.

REMOVED.

THE SUBSCRIBER has removed his Patent Agency from 189 Water to 43 Fulton street.

The object of this Agency is to enable Inventors to realize something for their inventions, either by the sale of Patent Goods or Patent Rights.

Charges moderate, and no charge will be made until the inventor realizes something from his invention.

Letters Patent will be secured upon moderate terms. Applications can be made to the undersigned, personally or by letter post paid.

n8 SAMUEL C. HILLS, Patent Agent.

PREMIUM SLIDE LATHES.

THE subscriber is constantly building his improved Lathes of all sizes, from 7 to 30 feet long, and can execute orders at short notice.

JAMES T. PERKINS,
Hudson Machine Shop and Iron Works,
m11 Hudson, N. Y.

Machinery.

PERSONS residing in any part of the United States who are in want of Machines Engines, Lathes, OR ANY DESCRIPTION OF MACHINERY, can have their orders promptly executed by addressing the Publishers of this paper. From an extensive acquaintance among the principal machinists and a long experience in mechanical matters they have uncommon facilities for the selection of the best machinery and will faithfully attend to any business entrusted to their care. MUNN & CO. a15

GURNEY'S PREMIUM DAGUERRIAN GALLERY.—No. 189 Broadway.

☞ The oldest establishment of the kind in the city. All persons wishing a perfectly finished Picture in every respect would find it to their advantage to call and examine the Pictures taken by his New Process and for which the first Premium, a silver medal, was awarded at the late fair of the American Institute for 1848. d16 3m*

Johnson's Improved Shingle Machine.

THE Subscriber having received Letters Patent for an improvement in the Shingle Machine, is now ready to furnish them at short notice, and he would request all those who want a good machine for sawing shingles, to call on him and examine the improvements he has made, as one eighth more shingles can be sawed in the same given time than by any other machine now in use. Manufactured at Augusta, Me. and Albany, N. Y. J. G. JOHNSON.
Augusta, Maine, Oct. 28, 1848. o28 1y

Lap welded WroughtIron Tubes FOR TUBULAR BOILERS,

From 1 1-2 to 6 inches diameter, and any length, not exceeding 17 feet.

THESE Tubes are of the same quality and manufacture as those extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers.

THOMAS PROSSER, Patentee,
d30 28 Platt street, New York

HARTSON'S FIRST PREMIUM TOOL MANUFACTORY —42 Gold st. N. Y.

WHERE he continues to manufacture at short notice his Superior Turning Lathes, Drilling, Slotting. Bolt and Gear Cutting Machines of all sizes, together with all other tools required in engine and Machine Manufactories. All made in the best possible workman-like manner. Each tool is carefully adjusted before leaving the manufactory. Communications for particulars cheerfully responded to by addressing, (Post paid.)

j13 3m. G. B. HARTSON

SAW MANUFACTORY.

LEAVITT & M'DANIEL, Fisherville, N H, Manufacturers of Mill, Circular, Tennon, Cross-cut, and Pit Saws. Also, Felloe, Turning and Veneering Saws; Billet or Wood Cutter's Saws; Iron or Brass Web Saws, Pruning and Butcher's Bow Saws, Chest, Hand, Pannel and Ripping Saws. Also, Plastering Trowels. J. McDaniel, Concord, Wm. B Leavitt, Fisherville. RUFUS R. LEE,
Manufacturers' Agent, No. 11 Kilby st. (up stairs)
d30 3m* Boston, Mass.

IMPORTANT TO WOOLEN MANUFACTURERS.

THE subscriber in consequence of declining health is desirous of disposing of his Wool Carding, Dyeing and Cloth Dressing Establishment situated in the Town of West Somers, Westchester Co. N. Y. The building is in good repair and the Machinery in perfect running order with a profitable set of customers. The Establishment pays an an excellent profit and affords the best facilities for Country Manufacturing. The only cause for the owner wishing to sell is for the reason above stated. Further information may be obtained by applying to Josiah Fowler No. 20 Beaver st. New York, or by addressing the subscriber (post paid) at Peekskill, N. Y. R. C. VARNEL.
j20 4t*

Z. C. Robbins,

Consulting Engineer and Counsellor for Patentees.

Office on F street, opposite Patent Office, Washington, D.C. j20 tf

BRICK MACHINE WANTED.

THE subscriber wishes to purchase one or two Brick Moulding Machines of cheap, durable and simple construction. A machine that will mould bricks without the use of dust or sand upon the moulds would be preferred.

Persons having such machines for sale address the subscriber at Washington, N. C. (Beaufort County,) giving a description of the same.

j27 3t H. J. B. CLARK.

Agricultural Implements.

☞ Inventors and Manufacturers of superior Agricultural Implements may find customers for their goods by applying at the Agricultural Warehouse of S. C. HILLS & CO. 43 Fulton st. n8

A. G FAY.

MANUFACTURER of Lead Pencils. Graduated Drawing; writing and Stylographic; and Artist's pencils, Crayons, Ever points, Pen Holders &c.

The above pencils are peculiarly adapted to Mechanics use, as they possess great firmness and strength of points.

Orders solicited from all parts of the country and goods forwarded with despatch.

Concord, Mass. j20 tf

© 1849 SCIENTIFIC AMERICAN, INC

Lutes.

The following condensed extracts from Campbell Morfitt's recent work on chemical manipulations, will we know be interesting to many of our readers. In joining separate pieces of apparatus together, some means are used to hermetically seal or close the joints. This is particularly requisite in sublimation, distillation and other heating operations and indeed in all experiments with gases and fluids to prevent the escape of volatized particles into the atmosphere. To accomplish this different substances called *Lutes* are employed—different lutes for different purposes. For flexible joints and flexible tubes india rubber sheets, firmly tied is about the best substance.

For luting the joints of retorts, bladder coated with white of eggs or isinglass forms an excellent covering, but not for experiments where corrosive vapors arise. Flax seed meal mixed into paste with milk is a good lute used under a heat below 500 degrees. A lute for joining glass to glass, or glass and steel, is made by dissolving gum mastic in alcohol, mixing the same with isinglass solution and a small portion of amoniac. This mixture is very useful—and can be kept in a bottle and warmed before using. A lute for joining crucibles is made of a mixture of fine clay and ground bricks kneaded into a paste with water into which about a tenth part of borax is dissolved.

A good cement for joining iron joints together, is made of 80 parts of clean iron turnings middling fine, 2 parts sal amoniac and 1 of sulphur and enough of water to moisten the whole slightly. No more should be mixed than is to be used at once.

A good fine lute, is made of clay 2 parts, sharp washed sand 8 parts and horse manure 1 part. These materials are well mixed and the whole tempered like mortar. For coating fire vessels, some chopped straw mixed with the lute should be used as this combines a mechanical with the chemical adhering tenacity, to prevent some lutes cracking off.

To render earthen ware retorts impervious to air, the following is a good coating. One ounce of borax dissolved in half a pint of boiling water and as much slack lime added as will make a thin paste. This is spread over the vessel with a brush and when it is dry, a coating of slacked lime and linseed oil is applied. This will dry in about two days and is fit for use.

The best cement for common labels, is gum tragacanth boiled in water. This is the best to paste on glass and other smooth surfaces. A few drops of the oil of turpentine retards its decomposition and keeps it unaltered for some time.

Lutes should be applied to joints whilst soft and the hand is the best to pad them round. As they become dry they should be pressed compact with the fingers. When any leaks occur they must be stopped with a fresh portion of the lute pressed in with the fingers. When a bladder has to be pasted over a luted joint, the lute should be dry before the bladder is tried on.

When the operation is finished and the apparatus to be disconnected, the lute is first removed with the hands. Sometimes however, the hard lutes for fire processes adheres very tenaciously, in that case a knife or chisel or some sharp instrument must be used cautiously.

The Manufacture of Gold Leaf and Gold Wire.

A gold-beater having melted a quantity of find gold, beats it on his anvil into a plate as thin as paper, then cuts it with his shears into little pieces about an inch square. These he puts between the leaves of a sort of book made of vellum and with a hammer beats them, on a marble block, till they stretch nearly to the size of the book He then takes them out, cuts them in four, and puts them into another book to be farther extended in the same way. When they are brought to a certain degree of fineness in the two first books, they are again cut into four, and made to undergo the same hammering in two others, which as well as the former are called moulds; but the leaves of these, instead of vellum, are made of ox-guts well scoured and prepared for that purpose. The leaves of gold being beaten to the thinness required, which is greater or less, according to the use for which it is intended, are disposed in little paper books, prepared with red bole, to cause the gold to stick; and thus they are kept for sale. By this operation, an ounce of gold is beat into a surface of one hundred and forty-four square feet; and it has been computed, that the thinnest parts of some gold leaves are scarcely one 360,000dth part of an inch thick.

But the distension of gold under the hammer is inconsiderable, when compared with what it undergoes in the "drawing iron."—What we call gold wire is made of a cylindrical ingot of silver, usually about two or three inches round, which, being covered with leaf-gold, is successively drawn through the holes of several irons each smaller and smaller till it be as fine or finer than a hair of the head. The ingot passes through a hundred and forty, or fifty, holes before it is brought to its utmost fineness, every new hole lessening its diameter; but, then, it gains in length what it loses in thickness and consequently, increases in surface, yet, the thin covering of gold still follows the silver in all its extensions and never leaves the minutest part bare even to the microscope. Mr. Reaumur, who has been very curious in his calculation respecting the ductility of gold, observes that an ingot or roll of silver weighing thirty pounds about an inch and a half in diameter and twenty-two inches long, is usually covered over by the wire-drawers with two ounces of leaf-gold, and sometimes with little more than one; so that the thickness of the gold seldom exceeds a five-hundredth part of an inch and sometimes not a thousandth part.

The same ingenious philosopher found, by exact weighing and the most accurrate computation that an ounce of the fine wire drawn from such an ingot, covered with two ounces of gold, was 3,232 feet long, and, consequently the whole ingot, 1,163,520 feet, Paris measure; which are equal to 1,264,400 English feet, or 240 miles. But this is not all: for the greatest part of our gold wire is spun or wound on silk, for which purpose, it is pressed flat between two rollers of well-polished steel and by this pressure it is lengthened about one-seventh; so that, instead of 150 miles, we may now reckon 274. The breadth of this thin lamina is a 96th part of an inch; and by calculation it appears that an ounce of gold is thus spread into a surface of 1190 square feet; whereas by the gold-beater's hammer it is only extended to 146, as before mentioned.

Amazing as this appears the gold may still be reduced to much more excessive thinness by repeating the pressure between the steel rollers, and yet remain a perfect covering for the silver so that the best eye, even assisted by the best microscope, cannot discern the least chasm or discontinuity.

Fire Proof Cement.

Take three pounds of oak or hemlock bark, ground into fine powder and boil in two quarts of water till one half of the water has evaporated, then mix this with 7 pounds of dry fire clay. This done, the clay is to be dried and all reground. This is the first preparation The second is a half a pound of glue dissolved in a pint of water to which is added one quarter of a pound of slacked lime, and this mixture is well boiled, when 7 pounds of fire clay is added and the whole dried and reground to powder. These two compositions are mixed while in a state of powder with eight times their weight of the plaster of Paris, added in clear sand double the amount of the plaster of Paris, or ground flint, or glass, and these several ingredients being properly mixed makes the very best fire cement known. When it is to be used, it is mixed with water like other plaster, and applied as a coating to walls, chimnies or for safes or fire proof boxes, which if stationary should be coated outside of the iron as well as inside. This cement is good for hydraulic purposes to set under water, if metal filings be used as a substitute for the fire clay. This cement is excellent for making walls fire proof by putting on a primary coating of it, and laying the decorative part on it. which should be composed as follows. To one pound of boiled glue add 2 ozs. of slacked lime, which should be well mixed and then add some fine clay and dry and grind to powder, then mix with this some good coloring substance and add 14 lbs. of the carbonate of barytes mixing them well, adding plaster of Paris 8 times the weight of the barytes. Fine plaster mouldings can be made of the above composition.

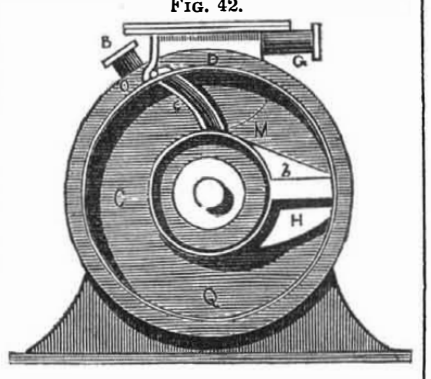
This cement has the quality of setting first in the inside, at the part where it is laid on, and then drying outwards. Any quantity may be made with the above proportions of substances.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

RUTLEDGE'S ROTARY ENGINE.

FIG. 42.



This is an engine invented by Mr. Joshua Rutledge, of Bolton, England, in 1818, and which embraces the principle of one which we saw in operation as a new invention, two years ago, but which has failed entirely to reward the expectation of the honest, though mistaken inventor.

Suppose the steam-stop C, and the lever H *b*, to be properly packed in the situation represented by the drawings, so that the steam cannot escape past either one or the other, it will be evident that if the steam is admitted through the pipe G into the space M, the lever H *b* will be propelled forward towards C through the space O, until the sloping part H comes in contact with the lower point of the steam stop C, which will then turn upon a steam-tight joint or centre O, and rise up into the box or chamber D until the level H *b* has passed by. The pressure of the steam then compels the stop C to follow the lever down the inclined plane *b*, until it comes in to its former resting place, where it remains stationary upon the cylindrical of the level, as seen in the drawing, until again raised by the sloping part H, as before. During the time that the point H *b* is passing the steam-stop C, the steam that had last carried the lever round makes its escape through the pipe B, on the other side behind the induction tube either into the open air or into a condenser, and new steam is again instantly admitted and so on continually. When the engine is thus constructed with only one arm or lever there is about one-tenth of the circle or revolution where the steam has no power; the motion of the engine is then kept up by the velocity already given to the fly-wheel; but when two arms or levers are used, as in large engines, then the steam is made to act with equal force through the whole of the revolution.

Alloys of Metals.

In making the various kinds of bronze and brass, there are certain established component parts of each mixed together, which work very well and are never departed from in practice. The cause of such metals combining together and the alloys they make are never made the subject of enquiry, by one out of every hundred that use them,—hence we hear of few discoveries in this art—the Chinese gong is not surpassed in tone by modern rivalry, and the blades of Damascus steel are still as unrivalled as in the days of Saladdin.

The Germans have been most distinguished in the discovery of new and the improvement of old alloys—hence we hear of German silver, &c.

Chinese silver is a new alloy which is now employed in Germany for the manufacture of beautiful table ware, almost rivalling silver itself. It is composed of the following component parts, copper 62, zinc 19, nickel 13, cobalt and iron, a very small quantity, about a ninth part. This alloy in the ware is plated with silver by the voltaic process, explained in a number of articles in our last volume.—For every hundred parts by weight of the above metal, 2 parts of silver are used in the plating.

Elastic German silver, an alloy that is very ductile, a good substitute for steel in many respects and which will not rust, is composed of copper 57.4 parts, zinc 25, nickel 13, iron 9.

Electrum is a new and a splendid alloy. It is composed of copper 8 parts, nickel 4, zinc 3½. This composition has the whitish tint of burnished silver and is not easily tarnished by the action of the air.

Solder for German silver is composed of 5 parts German silver and 4 parts of zinc. This alloy is run out into plates and afterwards pulverised for use.

How to Treat a Watch.

First—Wind your watch as nearly as possible at the same time every day. Secondly—Be careful that your key is in good condition as there is much danger of injuring the machine when the key is worn or cracked; there are more mainsprings and chains broken through a jerk in winding than from any other cause, which injury will sooner or later be the result if the key is in bad order.—Thirdly—As all metals contract by cold and expand by heat it must be manifest that to keep the watch as nearly as possible at one temperature is a necessary piece of attention. Fourthly—Keep the watch as constantly as possible in one position, that is, if it hangs by day let it hang by night against something that is soft. Fifthly—The hands of a pocket chronometer or duplex watch should never be set backwards; in other watches this is of no consequence. Sixthly—The glass should never be opened in watches that set and regulate at the back. One or two directions more it is of vital importance that you bear in mind.

On regulating a watch, should it be going fast move the regulator a trifle towards the slow, and if going slow do the reverse; you cannot move the regulator too slightly or too gently at a time and the only inconvenience that can arise is, that you may have to perform the duty more than once.

THE BEST
Mechanical Paper
IN THE WORLD!
FOURTH YEAR OF THE
SCIENTIFIC AMERICAN!

416 Pages of most valuable information, illustrate with upwards of
500 MECHANICAL ENGRAVINGS!

☞ The Scientific American differs entirely from the magazines and papers which flood the country, as it is a Weekly Journal of Art, Science and Mechanics, having for its object the advancement of the INTERESTS OF MECHANICS, MANUFACTURERS and INVENTORS Each number is illustrated with from five to TEN original ENGRAVINGS OF NEW MECHANICAL INVENTIONS, nearly all of the best inventions which are patented at Washington being illustrated in the Scientific American. It also contains a Weekly List of American Patents; notices of the progress of all Mechanical and Scientific Improvements; practical directions on the construction, management and use of all kinds of MACHINERY, TOOLS, &c. &c.

It is printed with clear type on beautiful paper, and being adapted to binding, the subscriber is possessed, at the end of the year, of a large volume of 416 pages, illustrated with upwards of 500 mechanical engravings.

TERMS: Single subscription, $2 a year in advance; $1 for six months. Those who wish to subscribe have only to enclose the amount in a letter, directed to MUNN & CO.
Publishers of the Scientific American,
128 Fulton street, New York.
All Letters must be Post Paid.

INDUCEMENTS FOR CLUBBING.

5	copies for	6	months	$4 00
5	"	12	"	$8 00
10	"	6	"	$7 50
10	"	12	"	$15 00
20	"	6	"	$15 00
20	"	12	"	$30 00

Southern and Western Money taken at par for subscriptions. Post Office Stamps taken at their fair value.

A SPLENDID PRESENT!

To any person who will send us Three Subscribers, we will present a copy of the PATENT LAWS OF THE UNITED STATES, together with all the information relative to PATENT OFFICE BUSINESS, including full directions for taking out Patents, method of making the Specifications, Claims, Drawings, Models, buying, selling, and transfering Patent Rights, &c. This is a present of GREAT VALUE, yet may be obtained for nothing, by the reader of this prospectus, if he will take the trouble to get Three Subscribers to the Scientific American. It will be an easy matter to obtain two names besides his own.

MUNN & CO., Scientific American Office, N. Y

© 1849 SCIENTIFIC AMERICAN, INC